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The December *Review*

How much do we have to work and what do we buy with what we earn at work are two important questions we ask as economic actors. How do we best measure such things as the length of the workweek or the prices of energy are important questions we ask as economic statisticians. In this month's *Review*, we wear both masks.

In our role as consumers, Geoffrey D. Paulin details the way our expenditures on food at home have changed in response to changing tastes, consumer characteristics, and distribution channels between 1980 and 1992. Paulin combines data from the BLS Consumer Expenditure Survey and the Department of Agriculture Diet and Health Knowledge Survey to analyze the impact of nutritional awareness on the consumption patterns of specific demographic groups.

In our role as statisticians, Katherine A. Klemmer and Joseph L. Kelley analyze the validity of the Bureau's producer price indexes for the price-volatile group of energy commodities at various stages of processing. Their comparisons of trends in the energy PPIs and trends in alternative energy price measures failed to reject the null hypothesis that the trends in the series were essentially the same.

Jerry A. Jacobs lets us play both roles at once. As workers, we are interested in the hours per week we work; as economic statisticians, we are interested in what method of measurement best captures the workweek. Jacobs finds that the self-reported hours measures, such as those BLS uses in the Current Population Survey, are reasonably reliable indicators of the broad range of time workers are employed.

Marking to market more often

The Bureau of Labor Statistics (BLS) will update the consumption expenditure weights in the Consumer Price Index for all Urban Consumers (CPI-U) and the CPI for Urban Wage Earners and Clerical Workers (CPI-W) to the 1999–2000 period to calculate the indexes for January 2002. CPI expenditure weights will be updated at 2-year intervals subsequent to the 2002 updating. Thus, for example, CPI expenditure weights will be updated to the 2001–02 period effective with release of CPI data for January 2004. As a result of this change, expenditure weight data will be, on average, "2 years old" when introduced into the CPI, and 4 years old when replaced. By contrast, the 1993–95 weights in use now were, on average, 3½ years old when they were first used in the indexes for January 1998, and they replaced weights that were about 15 years old.

In June 1997, in a paper prepared for the Chairman of the Joint Economic Committee, BLS said that it was considering a more frequent schedule of updates to follow the planned January 1998 update. In an August 1997 response to a General Accounting Office report, BLS indicated that more frequent updates would be preferable, that the future schedule was under review, and that the decision would be based on a consideration of what frequency would yield the most accurate CPI and best support the many uses of the index. The review is now complete and is the basis for the policy announced above.

In the BLS view, the goal in employing more current expenditure weights is to make the CPI reflect, as much as possible, the inflation currently experienced by consumers. More specifically, the use of current weights will help to ensure that the relative importance of CPI item categories, such as food away from home, college tuition, or medical care services more accurately reflects how consumers are allocating their spending. Furthermore, BLS does not view the choice of update frequency as a means of addressing the problem sometimes referred to as "upper-level substitution bias" in the CPI. Although it has been argued that using more current, more frequently updated, weights would lower the index's rate of growth by reflecting consumer response to changes in the relative prices, there is little evidence of any systematic link between the CPI's growth rate and the age of its expenditure weights. It is more likely, based on the Bureau's research, that incorporating new weights more frequently will have a small upward effect on the index in some years and a small downward effect in other years.

Fewer injuries and illnesses at work

A total of 6.1 million injuries and illnesses were reported in private industry workplaces during 1997, resulting in a rate of 7.1 cases per 100 equivalent full-time workers. The rate for 1997 was the lowest since BLS began reporting this information in the early 1970s. The number of cases was about the same as in 1996, although hours worked increased 3 percent. As a result, the case rate declined.

The incidence rate for injuries and illnesses was 8.5 cases in 1993, but has fallen each year since then. The decline in the case rate was reflected in both the goods-producing and service-producing industries. The injury and illness incidence rate for goods-producing industries was 9.9 cases per 100 full-time workers in 1997, down from 11.9 in 1993. The service-producing sector reported an incidence rate of 5.9 cases per 100 workers in 1997, down from 7.1 percent 4 years earlier. For additional information, see news release USDL 98–494, *Workplace Injuries and Illnesses in 1997.* □

Communications regarding the *Monthly Labor Review* may be sent to the Editor-in-Chief at the addresses on the inside front cover, or faxed to (202) 606–5899.

News releases discussed in this issue are available at **http//stats.bls.gov/newsrels.htm.**

The changing food-at-home budget: 1980 and 1992 compared

Consumers appear to have made changes to their diet between 1980 and 1992; many have replaced red meat with poultry and have reduced their consumption of eggs

Geoffrey D. Paulin

In the 1960s, it was wheat germ and yoga. In the 1970s, it was granola and jogging. In the 1980s, it was oat bran and aerobics. Every decade appears to have had its own prescription for good health, and the 1990s are no exception. The news continually reports findings from medical studies that link foods with health conditions, either good or bad. For instance, studies have linked the consumption of cruciferous vegetables to a reduced risk of certain types of cancer, polyunsaturated fats to lower levels of total blood cholesterol, and monounsaturated fats to lower "bad" cholesterol and maintenance levels of "good" cholesterol.[1] Americans are advised to lower their consumption of red meats and to increase the amount of fiber and complex carbohydrates they consume by eating more breads, rice, pasta, and fresh fruits and vegetables.

But are consumers following this advice? Evidence from the U.S. Department of Agriculture suggests that some changes in dietary patterns have occurred recently.[2] For instance, per capita consumption of red meat fell 10 percent between 1980 and 1992, while per capita consumption of poultry rose 48 percent over the same period.[3] Per capita consumption also increased for fish (19 percent), flour and cereal products (29 percent), dairy products (4 percent),[4] fresh fruits (14 percent), and fresh vegetables (18 percent).[5] The 15-percent increase in per capita consumption of fats and oils from 1980 (57.2 pounds) to 1992 (65.6 pounds) was due to a 23-percent increase in consumption of vegetable fats (44.8 pounds to 55.2 pounds), combined with a 15-percent decrease in consumption of animal fats (12.3 to 10.4 pounds per capita).

But there is a limitation to the data: because the figures cited rely on estimates of food disappearance, they may not accurately reflect changes in actual food intake. For example, the report overstates turkey consumption, because an increasing amount of the supply of turkey is used for pet foods.[6] Similarly, consumption of fats and oils may not be accurately measured, because the figures include waste grease from restaurants. After use in deep frying, waste grease is utilized in animal and pet foods, as well as in industrial operations, and is also sold for export, amounting to about 9 percent of the 1992 disappearance of fats and oils.[7] Furthermore, it is not clear from the figures how Americans are consuming these foods. The increase in fresh vegetable consumption may be in part due to the proliferation of salad bars in grocery stores and of fast-food and other restaurants.[8] And changes in fat consumption may also be due to changes at fast-food establishments, and to the use of salad oils at salad bars.[9]

Although any improvement in diet is good, it is more important to look at patterns in food eaten at home, for several reasons. First, most families eat more meals at home (where the family has more control over the ingredients used) than away from home.[10] Furthermore, the figures cited

Geoffrey D. Paulin is an economist in the Division of Consumer Expenditure Surveys, Bureau of Labor Statistics. All opinions expressed in this article are those of the author and do not constitute policy of the Bureau of Labor Statistics.

above do not make clear who is purchasing the foods: are changes observed in the population in general or only in certain segments of the population? As the report says, "Data from the periodic NFCS [Nationwide Food Consumption Survey] and Consumer Expenditures [sic] Survey conducted by the Bureau of Labor Statistics are more useful for measuring the effect of socioeconomic and demographic characteristics on food consumption behavior."[11] Because the NFCS is conducted only about once every 10 years (most recently, in 1987–88), data from the continuing Consumer Expenditure Surveys are an attractive alternative.[12]

Many authors have modeled demand for major food groups as it relates to consumer characteristics.[13] Some have looked at demand for selected food items, such as dairy products.[14] Others have examined income or other elasticities for specific food items.[15] One article attempts, at least in part, to compare the consumption of fruits and vegetables with levels of intake suggested by various sources from the U.S. Department of Agriculture to see how far away consumers of different demographic backgrounds are from consuming the recommended intake.[16] But a search of the literature revealed no publications that address two critical issues, which are examined in this article: How have nationwide consumption patterns changed, if at all, over time? and How aware are consumers of nutritional issues, and, to the extent of their awareness, do consumption patterns appear to be consistent with consumers' knowledge of nutrition?

The discussion that follows examines data from the Diary portion of the 1980 and 1992 Consumer Expenditure Surveys and newly published results from the Diet and Health Knowledge Survey (DHKS), a national survey of nutritional attitudes conducted by the U.S. Department of Agriculture's Agricultural Research Service. First, using the Consumer Expenditure data, shares of total food spending for several demographic groups are analyzed for differences over time. An index is described that accounts for the influence of price changes on shares and that estimates the change in quantities of specific foods consumed relative to all food consumed. Second, logistic regressions are performed to see if the probability of purchasing certain types of food has changed for different groups. The demographic characteristics examined include the age of the reference person,[17] family income level,[18] race, and the marital status of the reference person. Third, regressions using the Heckman two-stage procedure are performed to estimate income elasticities of selected food groups for different demographic groups. At the same time, results from the DHKS are also cited to ascertain the level of nutritional awareness attained by different demographic groups. These data help explain changing patterns. For example, if older consumers were found to be the group most concerned about saturated-fat and cholesterol intake, it would not be surprising to see their expenditures for eggs decreasing over time. This article likely represents the first time that results from the DHKS have been linked to another nationwide survey (the Consumer Expenditure Survey) to investigate changing food expenditure patterns.

The data

Consumer Expenditure Survey data. The Diary component of the Consumer Expenditure Survey is composed of reports from more than 5,000 consumer units[19] annually. Participating families receive a diary for two consecutive 1-week periods in which they record expenditures for many different items. Purchases of food for home consumption are documented in great detail. In 1980, 10,433 diaries were available for study; in 1992, 11,713 diaries were. Each observation represents one family's response for 1 week. Dividing the number of observations by 2 yields an approximate count of unique families.[20] All observations are treated independently. The results are weighted to represent the total population of about 85 million families (including single persons) in 1980 and 100 million families in 1992. Unless otherwise specified, the sample described includes all families participating in the 1980 and 1992 surveys.

Report on attitudes toward nutrition. Between April 1989 and May 1992, the Department of Agriculture conducted the DHKS for the first time. This survey was "designed so that individuals' attitudes and knowledge about healthy eating...could be linked with their food choices and nutrient intakes."[21] The survey interviews main meal planners or preparers in U.S. households, who are asked specific questions designed to find out their knowledge and attitudes about dietary issues.[22] For example, respondents are asked, "In your opinion, should your diet be lower or higher in saturated fat or is it just about right compared with what is most healthful?"[23] The data are broken out by several demographic groupings, including age, income, race, and gender.

One important fact about the DHKS is that it is the first survey designed to link dietary attitudes and food consumption on a nationwide basis. Because it is a recent source of data, it is not yet possible to see whether knowledge about nutrition has changed over any length of time on a national basis.[24] However, combined with results from the Consumer Expenditure Survey, the DHKS data may be used both to confirm that families in the later period are at least aware of what they should be eating and to investigate whether expenditure patterns are moving in that direction.

Shares analysis

In this section, five major food groups are considered: cereal and bakery products; meat, poultry, fish, and eggs; dairy prod-

Table 1. Changes in food purchases, all consumer units, 1980 and 1992

Item	1980	1992	Percent change in CPI, 1980–92	Share index
Consumer units (thousands)	85,188	100,082	...	...
Income before taxes[1]	$17,985	$33,407	...	...
Average number of persons	2.7	2.5	...	...
Age of reference person	46.1	47.4	...	...
Number in consumer unit:				
Persons under age18	.8	.7	...	...
Earners	1.4	1.4	...	...
Average weekly expenditures for:				
Food at home	$33.22	$49.99	...	...
Cereal and bakery products	4.27	7.90	...	...
Meat, poultry, fish, and eggs	11.43	13.22	...	...
Dairy products	4.47	5.80	...	...
Fruits and vegetables	4.92	8.24	...	...
Other food at home	8.11	14.84	...	...
Share of food at home (percent):				
Food at home	100.0	100.0	54.8	...
Cereal and bakery products	12.9	[2]15.8	80.6	1.05
Cereal and cereal products	4.2	[2]5.4	82.1	1.09
Bakery products	8.7	[2]10.4	79.5	1.03
Meat, poultry, fish, and eggs	34.4	[2]26.4	42.3	.83
Beef	13.2	[2]8.1	34.5	.71
Pork	7.3	[2]6.0	56.0	.82
Other meats	4.6	[2]3.6	41.3	.86
Poultry	4.5	4.7	40.2	1.15
Fish and seafood	2.8	2.9	73.4	.92
Eggs	1.9	[2]1.1	22.2	.73
Dairy products	13.5	[2]11.6	41.4	.94
Fresh milk and cream	7.1	[2]5.1	36.4	.82
Other dairy products	6.4	6.5	48.3	1.06
Fruits and vegetables	14.8	16.5	89.3	.91
Fresh fruits	4.3	[2]4.9	117.2	.81
Fresh vegetables	4.2	[2]4.9	99.9	.90
Processed fruits	3.5	[2]3.9	67.7	1.03
Processed vegetables	2.8	2.9	55.0	1.03
Other food at home	24.4	[2]29.7	43.9	1.31
Sugar and other sweets	3.6	[2]3.9	47.1	1.14
Fats and oils	2.9	2.8	45.4	1.03
Miscellaneous foods	8.8	[2]14.8	67.6	1.55
Nonalcoholic beverages	9.2	[2]8.2	25.1	1.10

[1] Complete income reporters only.

[2] Change in share is statistically significant at the 95-percent confidence level.

ucts; fruits and vegetables; and other food at home. Subcomponents of each major food group are shown in tables 1 through 5. A detailed breakdown of the subcomponents appears in the appendix.

The share index. The Diary survey results do not include information on quantities of food purchased—only the level of expenditure for each item is available. Because it is not possible to directly compare quantities purchased over time using these results, alternative methods must be utilized to ascertain whether food-purchasing habits have changed. One method is to examine how the total food budget is allocated. Although a Student's *t*-test on the shares[25] might seem appropriate at first, such a test does not conclusively indicate whether food purchases are changing. For example, if the price of butter doubles, and, as a result, the average family purchases half the quantity it usually purchases, then the share of the food budget spent on butter does not change, assuming that there are no changes in other food prices or quantities purchased. So price changes must be incorporated into the analysis. In order to do this, a share index is proposed to measure relative changes in the amount of food purchased. This index compares shares over time after they are adjusted using the Consumer Price Index (CPI),[26] which measures price changes in detail for many goods and services, including food at home. Therefore, price changes for specific food items can be compared with the change in overall food-at-home prices. (See chart 1.) If the share of total food expenditures for a particular food item in 1992 is different from the share found in 1980, and if the difference cannot be accounted for by price changes alone, then, at least relative to total food purchased, the amount of the specific food item purchased must have changed over time.

The computation of the share index is straightforward. Table 1 shows that meat, poultry, fish, and eggs accounted for 34.4 percent of total expenditures on food at home in 1980. The figure dropped to 26.4 percent in 1992. During that time, the price of meat, poultry, fish, and eggs rose 42.3 percent, compared with 54.8 percent for all food at home. This means that meat, poultry, fish, and eggs cost 1.423 times more in 1992 than they did in 1980, while all food at home cost 1.548 times more in 1992 than in 1980. If the quantities purchased of meat, poultry, fish, and eggs and of total food at home remained constant, then the share in 1992 should have been about 92 percent of the 1980 level (1.423/1.548 = 0.919). That is, if the quantities remained unchanged, meat, poultry, fish, and eggs should have

accounted for about 31.6 percent of the food budget in 1992. Because they accounted only for 26.4 percent, however, the quantities purchased of meat, poultry, fish, and eggs declined relative to total food consumption. In fact, the share (26.4 percent) was only about 83 percent of its expected value in 1992; hence, the share index is shown as 26.4/31.6, or 0.83.

The share index is easy to interpret. If it is greater than unity, the quantity purchased of the specific item has risen relative to the total quantity of food purchased. If the share index is less than unity, the quantity purchased of the specific item has fallen relative to the total quantity of food purchased. Subtracting 1 from the level of the index also shows by what percent the specific quantity has changed relative to that of all food. Thus, as shown in table 1, the food group consisting of meat, poultry, fish, and eggs accounted for about 17 percent less of total food in 1992 than it did in 1980. Cereal and bakery products, with a share index of 1.05, increased 5 percent relative to total food quantities purchased over the same period. It is worth emphasizing that the index does not measure absolute changes in quantities. For example, if the average family purchased twice as much meat, poultry, fish, and eggs in 1992 than in 1980, but 3 times as much of all other foods, the index is less than unity. Still, the measure is important in that it shows how the family purchased certain items relative to all food. And because it controls for price changes, it eliminates false interpretations that might arise from looking at changes in the share of total food alone, even if the changes are statistically significant. For example, the shares the average family devoted to fresh fruits and fresh vegetables each rose almost 1 percent from 1980 to 1992, but relative to all food purchased, the quantities actually declined substantially—10 percent for fresh vegetables and 19 percent for fresh fruits. (These and other annual changes in the share index are shown in chart 2.)

For ease of analysis, terms relating to food purchases and food consumption are used interchangeably to denote relative changes, as described by the share index. Changes of 5 percent or more, as indicated by the share index, are considered analytically significant.

Overview. Tables 1 through 5 show that, for most demographic groups, the share indexes for cereal and bakery products and for other food at home indicate an increase in relative purchases of these products between 1980 and 1992, while for all other food items (meat, poultry, fish, and eggs; dairy products; and fruits and vegetables), the indexes indicate a relative drop in purchases. In most cases, the index for cereal and cereal products is larger than the index for bakery products; similarly, the index for other food at home appears to derive its large magnitude from strong increases in purchases

Chart 1. Changes in CPI food price indexes, 1980–92

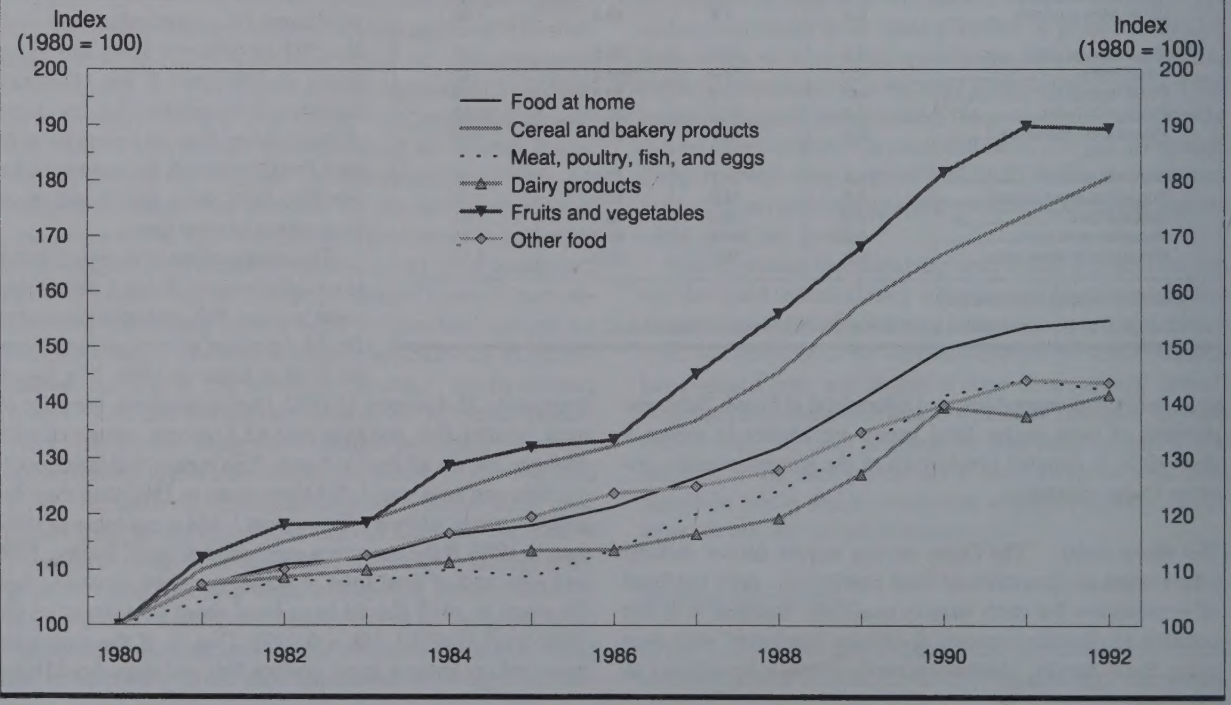


Table 2. Food purchases, by age of reference person, 1980 and 1992

Item	Under 35 years		35 to 64 years		65 and older		Share index		
	1980	1992	1980	1992	1980	1992	Under 35 years	35 to 64 years	65 and older
Consumer units (thousands)	29,092	28,716	39,568	49,713	16,528	21,654	...	...	...
Income before taxes[1]	$16,975	$28,500	$22,450	$42,807	$9,108	$19,624	...	...	...
Average number of persons	2.5	2.5	2.5	2.9	1.7	1.7	...	...	...
Age of reference person	26.8	27.6	46.5	47.2	73.0	74.1	...	...	...
Number in consumer unit:									
Persons under age 18	.9	.9	1.0	.9	.1	.1	...	...	...
Earners	1.4	1.4	1.7	1.7	.5	.5	...	...	...
Average weekly expenditures for:									
Food at home	$27.91	$41.70	$39.86	$58.30	$26.65	$41.92	...	...	...
Cereal and bakery products	3.51	6.54	5.19	9.16	3.40	6.81	...	...	...
Meat, poultry, fish, and eggs	9.47	10.68	13.88	15.99	9.03	11.14	...	...	...
Dairy products	3.91	4.90	5.34	6.78	3.38	4.75	...	...	...
Fruits and vegetables	3.85	6.36	5.85	9.43	4.60	8.00	...	...	...
Other food at home	7.17	13.22	9.60	17.35	6.23	11.23	...	...	...
Share of food at home (percent):									
Food at home	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...
Cereal and bakery products	12.6	[2]15.7	13.0	[2]15.7	12.8	[2]16.2	1.07	1.04	1.08
Cereal and cereal products	4.4	[2]5.9	4.1	[2]5.3	4.1	[2]5.2	1.14	1.10	1.08
Bakery products	8.2	[2]9.8	8.9	[2]10.4	8.7	[2]11.1	1.03	1.01	1.10
Meat, poultry, fish, and eggs	33.9	[2]25.6	34.8	[2]26.7	33.9	[2]26.6	.82	.83	.85
Beef	13.9	[2]8.2	13.2	[2]8.2	12.2	[2]7.5	.68	.72	.71
Pork	6.9	5.6	7.6	[2]6.0	7.2	6.5	.81	.78	.90
Other meats	4.4	[2]3.4	4.8	[2]3.7	4.2	3.5	.85	.84	.91
Poultry	4.4	4.7	4.4	4.7	5.0	4.7	1.18	1.18	1.04
Fish and seafood	2.4	2.6	3.0	3.1	3.1	3.0	.97	.92	.86
Eggs	1.8	[2]1.0	1.9	[2]1.0	2.1	[2]1.2	.70	.67	.72
Dairy products	14.0	[2]11.7	13.4	[2]11.6	12.7	[2]11.3	.91	.95	.97
Fresh milk and cream	7.4	[2]5.5	7.1	[2]5.0	6.5	[2]5.3	.84	.80	.93
Other dairy products.	6.6	6.3	6.3	6.7	6.2	6.1	1.00	1.11	1.03
Fruits and vegetables	13.8	15.3	14.7	[2]16.2	17.3	[2]19.1	.91	.90	.90
Fresh fruits	3.5	4.2	4.4	4.8	5.5	6.0	.86	.78	.78
Fresh vegetables	3.9	4.7	4.3	[2]4.8	4.8	5.4	.93	.86	.87
Processed fruits.	3.5	3.6	3.2	[2]3.7	4.3	4.7	.95	1.07	1.01
Processed vegetables	2.9	2.8	2.7	2.9	2.7	2.9	.96	1.07	1.07
Other food at home	25.7	[2]31.7	24.1	[2]29.8	23.4	[2]26.8	1.33	1.33	1.23
Sugar and other sweets	3.5	3.7	3.6	[2]3.9	3.6	[2]4.2	1.11	1.14	1.23
Fats and oils	2.8	2.4	2.9	2.8	3.2	3.2	.91	1.03	1.06
Miscellaneous foods	10.5	[2]16.9	8.4	[2]14.8	7.0	[2]12.0	1.49	1.63	1.58
Nonalcoholic beverages	8.8	8.7	9.3	[2]8.3	9.6	[2]7.3	1.22	1.10	.94

[1] Complete income reporters only.

[2] Change in share is statistically significant at the 95-percent confidence level.

of miscellaneous foods, probably because miscellaneous foods include frozen meals, which proliferated in the 1980s. More varieties became available during that period, including meals that were marketed as being gourmet-style foods or low in calories. Also, an increase in ownership of microwave ovens[27] and an increase in dual-income families,[28] making leisure time more valuable and prepared foods more affordable,[29] coincided during the period, rendering frozen meals a timesaving, convenient, and, therefore, attractive option for many families. Finally, the share of the food budget allocated for eggs was cut by about half for most groups between 1980 and 1992, a reduction that is consistent with results from the Department of Agriculture stating that "U.S. per capita egg consumption has declined steadily since the end of World War II from an all-time recorded high of 403 eggs in 1945"[30] to (a preliminary estimate of) 234 eggs in 1992.[31] (See chart 2.)

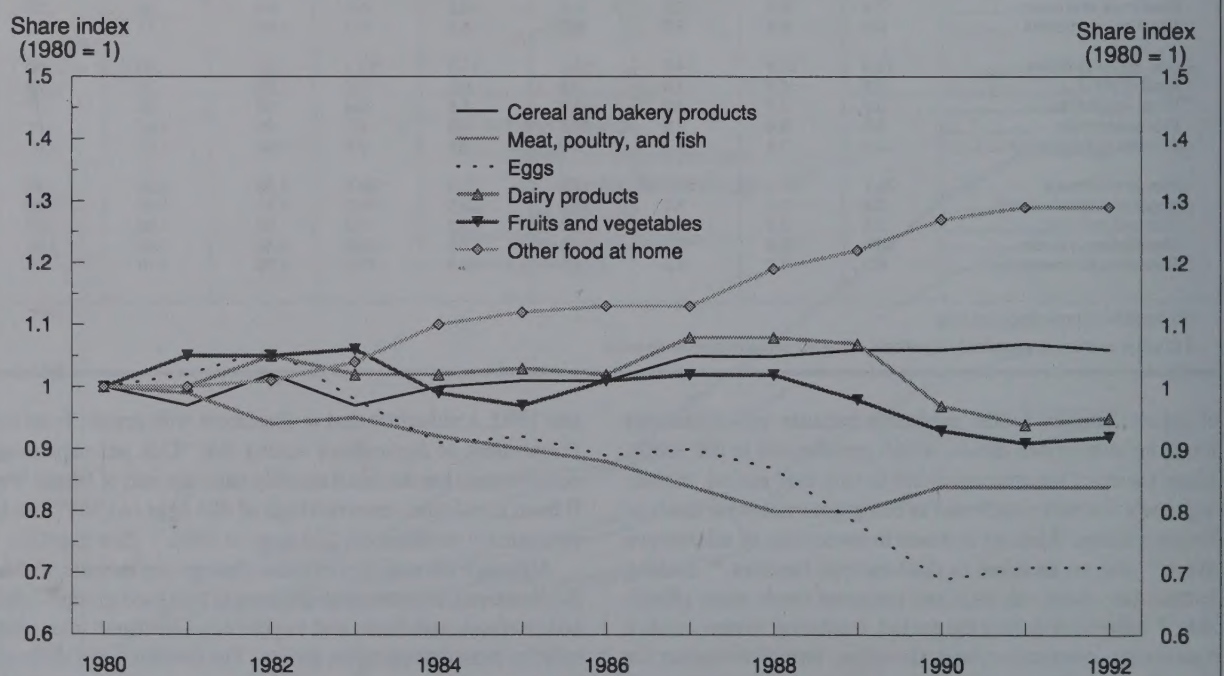
Although the majority of these changes are in more healthful directions, consumption patterns in two food groups—fish and seafood, and fruits and vegetables—declined unexpectedly for most demographic groups. The percentage of all families reporting expenditures on fish and seafood was fairly stable around a mean of 28 percent from 1980 through 1990.

However, the percentage fell from 28.2 percent in 1990 to 24.9 percent in 1992. The drop may have been due to an increase in prices over this period: fish and seafood prices rose 3.4 percent, compared with a price hike of 2.7 percent for beef and decreases of 1.5 percent for pork and 0.8 percent for poultry. To the extent that poultry and fish are substitutes,[32] it makes sense that families would purchase less fish and seafood and more poultry, given an increase in fish prices and a decrease in poultry prices. Evidence from other surveys also shows declining purchases of fish and seafood from 1990 through 1992. For example, the Bureau of Economic Analysis Personal Consumption Expenditure Survey, which measures expenditures of individuals and nonprofit institutions; the *Supermarket Business* annual survey of food manufacturers, packers, wholesalers, and retailers; and the *Progressive Grocer* study of stores with annual food sales of at least $2 million each show decreasing real weekly expenditures on fish and seafood from 1990 to 1992 (9.8 percent, 8.3 percent, and 15.2 percent, respectively).[33] Data from the Department of Agriculture show that fish and seafood consumption was 12.4 pounds per capita in 1980, peaked in 1987 at 16.1 pounds per capita, and dropped to 14.7 pounds in 1992.

Data on fruits and vegetables are more intriguing. The share index for total expenditures on fruits and vegetables (including processed fruits and vegetables) indicates a decrease in purchases for all demographic characteristics examined, although the percentage of all families reporting such expenditures increased slightly from 1980 (75 percent) to 1992 (78 percent). The share index for fresh fruits and vegetables was found to decline in every case examined, although the increase in the percentage of all families reporting expenditures on fruits and vegetables was about 7 percent for fresh fruits and fresh vegetables alike. However, the share indexes agree with data from the NFCS, which show a decrease in average annual household food use, measured in pounds per 21-meal equivalent person. Specifically, consumption of fresh fruits decreased from about 150 pounds in 1977–78 to about 147 pounds in 1987–88. Consumption of fresh vegetables (including potatoes, for consistency with the Consumer Expenditure Survey) fell from about 214 pounds to 185 pounds over the same period.[34]

But how can the percentage of families reporting increase, yet the amounts consumed decrease? To explain this phenomenon, families can be categorized into *new* purchasers and *continuing* purchasers. New purchasers are those who were not likely to purchase fresh fruits and vegetables in 1980, but who were more likely to purchase them in 1992. Continuing purchasers are those who were likely to purchase fresh fruits

Chart 2. Consumer expenditure share indexes, 1980–92



and vegetables regardless of the year. Two factors are undoubtedly at work. First, new purchasers are induced to purchase, perhaps because of a greater awareness of the relationship of the consumption of fresh fruits and vegetables to health. Second, by contrast, continuing purchasers, perhaps reacting to the fact that prices of fruits and vegetables have increased faster than prices of any other foods (see chart 1), cut back on purchases of fruits and vegetables. Now, if the new purchasers are a small fraction of all purchasers, then their average purchase must be large to counteract even a small decrease in average purchases by continuing purchasers, or else average purchases will decline for the population. Evidence from the Consumer Expenditure Survey data shows that this is indeed what happened. The real (that is, inflation-adjusted) mean weekly expenditure for fresh fruits in 1980 was $1.70, compared with $1.33 in 1992. Only bananas showed an increase in real mean expenditures, from $0.26 to $0.36. This is not so surprising, because the price increase for bananas (53 percent) was by far the smallest of all fresh fruits. (Oranges had the largest increase, 143 percent.) Fresh vegetables showed a similar decline in real mean weekly expenditures, from $1.78 in 1980 to $1.54 in 1992. Although expenditures for potatoes decreased only $0.01 (2.9 percent), expenditures for lettuce decreased $0.06 (23.1 percent), to-

Table 3. Food purchases and family income, 1980 and 1992

Item	Low income		Middle income		High income		Share index		
	1980	1992	1980	1992	1980	1992	Low income	Middle income	High income
Consumer units (thousands)	22,642	26,148	22,894	26,184	21,731	26,209	...	...	...
Income before taxes[1]	$5,270	$9,232	$15,597	$26,143	$33,749	$64,784	...	...	...
Average number of persons	2.0	1.9	2.8	2.5	3.4	3.1	...	...	...
Age of reference person	50.7	51.5	41.8	45.8	42.6	44.4	...	...	...
Number in consumer unit:									
Persons under age 18	.5	.5	.9	.7	1.1	.9	...	...	...
Earners	.7	.7	1.4	1.4	2.0	2.0	...	...	...
Average weekly expenditures for:									
Food at home	$23.42	$35.61	$34.78	$49.29	$47.19	$67.38	...	...	...
Cereal and bakery products	3.17	5.55	4.51	7.72	5.92	10.85	...	...	...
Meat, poultry, fish, and eggs	7.55	9.93	12.02	12.92	16.73	16.78	...	...	...
Dairy products	3.19	4.22	4.63	5.86	6.36	7.63	...	...	...
Fruits and vegetables	3.66	6.10	4.93	7.88	6.69	11.12	...	...	...
Other food at home	5.85	9.81	8.70	14.90	47.19	67.38	...	...	...
Share of food at home (percent):									
Food at home	100.0	100.0	100.0	100.0	100.0	100.0	...	...	...
Cereal and bakery products	13.5	[2]15.6	13.0	[2]15.7	12.5	[2]16.1	.99	1.04	1.10
Cereal and cereal products	4.9	5.6	4.5	[2]5.5	3.7	[2]5.3	.97	1.04	1.22
Bakery products	8.6	[2]9.9	8.5	[2]10.2	8.8	[2]10.8	.99	1.04	1.06
Meat, poultry, fish, and eggs	32.2	[2]27.9	34.6	[2]26.2	35.5	[2]24.9	.94	.82	.76
Beef	10.1	[2]8.2	13.8	[2]8.3	14.9	[2]7.6	.93	.69	.59
Pork	7.4	7.0	7.2	6.1	7.5	[2]5.1	.94	.84	.67
Other meats	4.5	[2]3.5	4.6	[2]3.8	4.4	[2]3.4	.85	.90	.85
Poultry	5.3	5.1	4.4	4.4	4.0	4.6	1.06	1.10	1.27
Fish and seafood	2.6	2.6	2.8	2.4	3.0	3.3	.89	.77	.98
Eggs	2.3	[2]1.3	1.9	[2]1.1	1.7	[2].9	.72	.73	.67
Dairy products	13.6	[2]11.9	13.3	11.9	13.5	[2]11.3	.96	.98	.92
Fresh milk and cream	7.7	[2]5.8	7.3	[2]5.5	6.7	[2]4.6	.86	.86	.78
Other dairy products	5.9	6.1	6.0	6.4	6.8	6.7	1.08	1.11	1.03
Fruits and vegetables	15.6	17.1	14.2	16.0	14.2	[2]16.5	.90	.92	.95
Fresh fruits	4.6	4.9	3.9	[2]4.8	4.2	[2]5.0	.76	.88	.85
Fresh vegetables	4.4	4.9	4.3	4.6	3.9	[2]5.0	.86	.83	.99
Processed fruits	3.7	4.1	3.2	[2]3.8	3.5	3.8	1.02	1.10	1.00
Processed vegetables	3.0	3.2	2.8	2.8	2.6	2.7	1.07	1.00	1.04
Other food at home	25.0	27.5	25.0	[2]30.2	24.3	[2]31.2	1.18	1.30	1.38
Sugar and other sweets	3.8	3.9	3.6	3.9	3.6	[2]4.2	1.08	1.14	1.23
Fats and oils	3.3	[2]2.8	3.0	3.0	2.7	2.6	.90	1.06	1.03
Miscellaneous foods	8.2	[2]12.7	8.9	[2]14.9	9.2	[2]16.0	1.43	1.55	1.61
Nonalcoholic beverages	9.6	[2]8.1	9.5	8.5	8.9	8.3	1.04	1.11	1.15

[1] Complete income reporters only.

[2] Change in share is statistically significant at the 95-percent confidence level.

matoes $0.05 (18.5 percent), and other fresh vegetables $0.14 (15.1 percent). When real mean weekly expenditures are divided by the percentage of consumer units reporting expenditures, to find the average real expenditure for those who actually purchased fresh fruits or vegetables, the results are even more convincing. Average weekly expenditures for families that reported purchases of fresh fruit declined from $3.35 in 1980 to $2.29 in 1992, while expenditures for fresh vegetables decreased from $3.28 to $2.52. Even bananas showed a small decrease in weekly expenditure ($0.03) when values for those reporting expenditures are compared. The fact that the percentage of families reporting increased, while average expenditures for fruits and vegetables decreased, underscores the importance of using both a share index and logistic regression to get a fuller picture of how purchases are changing.

Age. Age is expected to have a strong relationship to food expenditures, although which group is expected to eat more foods that are currently described as healthful is not clear a priori. Older persons have different health concerns than younger persons and so may be more inclined to eat carefully. But older persons also may find that lifelong eating habits are difficult to change. Surprisingly, when the share indexes are examined by age, few differences in the direction of change are found. (See table 2.) In almost every case, if the index indicates a change in one direction for one age group, it indicates a change in the same direction for all three groups. For example, purchases of beef, pork, fish, and eggs declined for all age groups, while purchases of poultry increased. One notable exception is the share index for fats and oils, which indicates a 9-percent decrease in relative consumption for the youngest group and an increase of 6 percent for the oldest group. This difference is particularly interesting when it is compared with analogous results from the DHKS: only 40.6 percent of meal planners older than 60 years thought that their diet should be lower in fat, compared with 60.3 percent of those under 39 years.[35]

Income. Level of income also is related to food expenditures.[36] Families with lower incomes have less flexibility than higher income families to adjust their food expenditure patterns should prices of foods change. In addition, reference persons of families with lower incomes have lower average levels of education, so they may not be as informed about health issues.[37]

In almost every case, the share indexes for the highest income group indicate a change in a more healthful direction. (See table 3.) For example, the largest increase in purchases of cereals and cereal products (22 percent) was associated with this group. Although each group showed a decrease in its share index for meat, poultry, fish, and eggs, the share index was smallest for the high-income group (0.76), followed by the middle- (0.82) and low-income groups (0.94). The indexes for beef and pork indicate a substantial drop in consumption for the high- and middle-income groups and a much lesser decline for the low-income group. Similarly, poultry consumption rises for each group, but the most for the high group. The fish and seafood index indicates the smallest drop for the high-income group (2 percent), but the largest for the middle-income group (23 percent). And while egg purchases decreased more than one-fourth for the low- and middle-income groups, they decreased by one-third for the high-income group. The index for fresh milk and cream shows the *largest* decrease in consumption for the high-income group, while the index for other dairy products shows that purchases increased *least* for the high-income group. The index for fresh fruits indicates decreased consumption for all groups, with the highest income group showing the smallest decline; by contrast, the index for fresh vegetables decreased more than one-eighth for the low- and middle-income groups, but showed virtually no change for the high-income group.

These findings are generally consistent with attitudes revealed by the DHKS. For example, middle-income families (defined in that survey as having income 1.31 to 3.50 times the poverty line) and high-income families (those with incomes greater than 3.5 times the poverty line) are the least likely to think that they have sufficient fiber in their diets: only 34 percent of meal planners in low-income families thought that their diets lacked fiber, compared with more than 40 percent of middle- and high-income families' meal planners.[38] Furthermore, the higher the family's income, the more likely the meal preparer was to have heard of health problems related to lack of fiber: less than 40 percent of low-income families' meal preparers had heard of such problems, compared with 52 percent of middle-income and 61 percent of high-income families' meal planners.[39] As these results show, low-income families cut back more on fresh fruits and vegetables than do the other groups and fail to increase their expenditures on cereal and bakery products, unlike the other groups.

The findings regarding meat expenditures are less easily reconciled with nutritional awareness. For example, when the meal planner is asked, "Should your diet be lower or higher in fat or is it just about right compared to what is most healthful,"[40] high- (56 percent) and middle-income (57 percent) meal planners are more likely than low-income families (47 percent) to think that their diet should be lower in fat; but when the meal planner is asked specifically about saturated fat,[41] less than half (42 percent to 46 percent) think that their diets should include less, regardless of income. On the other hand, there appears to be a positive relationship between level of income and knowledge of links between saturated fats and health problems:[42] about half of the low-income group is aware of these links, compared with less than two-thirds of

Table 4. Food purchases by single persons, 1980 and 1992

Item	Single persons, 1980			Single persons, 1992			Share index	
	Men	Women	t-statistic	Men	Women	t-statistic	Men	Women
Consumer units (thousands)	9,289	13,556	...	11,799	17,089	...	...	...
Income before taxes[1]	$11,932	$7,462	...	$21,290	$16,318	...	...	...
Average number of persons	1.0	1.0	...	1.0	1.0	...	...	...
Age of reference person	41.3	53.2	...	42.9	55.6	...	...	...
Number in consumer unit:								
Persons under age 18	.0	.0	...	.0	.0	...	...	...
Earners	.8	.5	...	.8	.5	...	...	...
Average weekly expenditures for:								
Food at home	$12.55	$13.90	...	$22.75	$24.93	...	...	...
Cereal and bakery products	1.57	1.72	...	3.47	3.97	...	...	...
Meat, poultry, fish, and eggs	3.75	4.24	...	5.88	5.87	...	...	...
Dairy products	1.63	1.86	...	2.81	2.93	...	...	...
Fruits and vegetables	2.13	2.71	...	3.89	4.88	...	...	...
Other food at home	3.47	3.36	...	6.70	7.28	...	...	...
Share of food at home (percent):								
Food at home	100.0	100.0	...	100.0	100.0	...	...	...
Cereal and bakery products	12.5	12.4	−.09	15.3	15.9	.43	1.05	1.10
Cereal and cereal products	3.5	3.7	.35	4.9	4.9	.03	1.19	1.13
Bakery products	10.7	8.6	−1.71	10.4	11.0	.52	.84	1.10
Meat, poultry, fish, and eggs	29.9	30.5	.18	25.8	23.5	−.95	.94	.84
Beef	10.2	9.6	−.35	8.1	6.4	−1.81	.91	.77
Pork	6.5	5.8	−.43	5.0	5.6	.78	.76	.96
Other meats	3.3	4.2	1.51	3.7	3.1	−1.22	1.23	.81
Poultry	4.1	[2]5.8	2.08	5.0	4.6	−.52	1.35	.88
Fish and seafood	3.6	3.2	−.47	3.0	2.6	−.83	.74	.73
Eggs	2.1	2.0	−.20	1.1	1.4	1.31	.66	.89
Dairy products	13.0	13.4	.30	12.4	11.8	−.46	1.04	.96
Fresh milk and cream	6.9	5.9	−1.30	5.9	4.7	−1.47	.97	.90
Other dairy products	6.1	[2]7.5	2.01	6.5	7.0	.73	1.11	.97
Fruits and vegetables	17.0	19.5	.98	17.1	19.6	1.40	.82	.82
Fresh fruits	4.1	[2]6.5	3.57	5.1	6.1	1.50	.89	.67
Fresh vegetables	6.0	5.6	−.18	4.7	5.7	1.64	.61	.79
Processed fruits	4.2	4.5	.39	4.4	4.6	.23	.97	.94
Processed vegetables	2.7	2.9	.54	2.9	3.2	.65	1.07	1.10
Other food at home	27.6	24.2	−1.31	29.5	29.2	−.10	1.15	1.30
Sugar and other sweets	3.9	3.7	−.24	3.2	4.1	1.88	.86	1.17
Fats and oils	2.0	[2]3.1	2.68	2.4	2.9	1.33	1.28	1.00
Miscellaneous foods	9.3	7.8	−1.33	14.6	14.2	−.29	1.45	1.68
Nonalcoholic beverages	12.4	[2]9.5	−2.08	9.3	8.1	−1.23	.93	1.06

[1] Complete income reporters only.

[2] Difference in shares by gender is statistically significant at the 95-percent confidence level.

middle-income families and slightly more than three-fourths of high-income families. When the meal planner is asked about the link between fat (without specifying whether it is saturated) and health problems,[43] the numbers increase for each group, but the relationship is still apparent: now, 2 out of 3 low-income families say that they have heard of a link, compared with 7 out of 10 middle-income families and 8 out of 10 high-income families.

Gender and race. Because gender and race characteristics can be broken into two groups (male and female; blacks, on the one hand, and white and other races, on the other), these groups can be compared easily within a year, as well as across years. It is assumed that each group faces the same prices within the same year; therefore, a *t*-test is useful in comparing the groups within a year. For comparison within a group across years, the share index is useful.

1. Gender. In the Consumer Expenditure Survey, it is not clear that the reference person is making the decisions about grocery purchases for the family, or even if the reference person exerts a great deal of influence in those decisions. Fur-

thermore, changes in family composition over time may influence purchasing decisions. By contrast, because a single person is the sole decisionmaker for his or her "family," differences in purchases by gender are likely the result of differences in taste or other influences that vary by gender. However, regression analysis is still necessary to achieve the greatest degree of certainty that gender influences food consumption, because incomes and other demographics may differ for single men and women.

Table 4 shows differences in expenditure shares for single males compared with single females. The *t*-statistics indicate that there were few statistically significant differences in expenditure shares by gender in 1980 and none in 1992. Yet, when *t*-statistics are compared across time (not shown in the table), single women are seen to have had significant changes in their share of expenditures for cereal and bakery products (the share increased), meat, poultry, fish, and eggs (decreased), and other food at home (increased), while single men have no significant changes in share over time for any major food category. This "paradox" can be resolved by considering the variances in expenditures for single men and women. If single women have a lower variance in expenditures than single men do, then smaller changes in shares over time for women will be statistically significant, while those for men will not. And in comparisons by gender over the same period, the larger variance in shares for men means that the difference in shares by gender must also be large to be statistically significant. These facts suggest that in both 1980 and 1992, the average single person, regardless of gender, followed certain dietary habits, but that single men were more likely than single women to deviate from those habits.

Nevertheless, there are some interesting differences in share indexes when single men and women are compared. Both sexes exhibit a decrease in purchases of meat, poultry, fish, and eggs, but the share index for women (0.84) is 10 points lower than for men (0.94). This difference is due in part to the fact that women cut back on all meat purchases, while men increased their consumption of poultry and other meats. The index for fruits and vegetables is the same for both sexes (0.82), but men cut back less on fresh fruits and more on fresh vegetables, while women did just the opposite. Similarly, women increased their purchases of sugar and sweets, while leaving their consumption of fats and oils unchanged, whereas men decreased their purchases of sugar and sweets and increased their consumption of fats and oils.

The DHKS does not break out data by family size, but it does have data comparing the knowledge and attitudes of male and female meal planners. Some differences in these two groups' perceptions of diet are worth noting.

The percentage of women (55 percent) who believe that their diets should be lower in fat is slightly larger than the percentage of men (51 percent) who believe similarly.[44] Women (51 percent) are also much more likely to believe that their diets are too high in sugar and sweets than are men (38 percent).[45] This difference is especially noteworthy, considering that the share index for women rose 17 points from 1980 at the same time the index for men fell 14 points. Men and women are probably closest in attitudes on fiber, with nearly 40 percent of each group believing that their diets should be higher in fiber and about 54 percent to 55 percent believing that their fiber intake is "about right."[46]

2. Race. Although only single individuals are examined by gender of the reference person, families can be examined by race of the reference person. Table 5 shows that, except for beef and other meats, shares spent for meat, poultry, fish, and eggs differ significantly by race, regardless of the year (1980 or 1992) the survey was conducted. Blacks spent larger shares than whites and others on pork, poultry, fish and seafood, and eggs in either year. However, both groups consumed less of most meat products in 1992 than in 1980, with two exceptions: whites and others increased their consumption of poultry, and blacks increased their consumption of fish and seafood. Changes in the consumption of other foods are not clearly related to race. The indexes indicate that whatever changes there were were in the same direction and similar in magnitude for most items, even at the subcomponent level.

The fact that black families spend larger shares than white and other families for meat products is interesting when taken in conjunction with the DHKS results.[47] Meal preparers in black families are more likely than meal preparers in white families to respond that their saturated fat intake should be lower (48 percent, compared with 43 percent), and the same holds true for cholesterol intake (48 percent, compared with 40 percent). This may indicate that at least the meal preparers are aware of the problem, even if habits are hard to break.

Logistic regression results

Even when accompanied by the share index, share analysis does not give a complete picture of changes in food consumption patterns. Changes in one segment of a group can affect the average share, even though not all members of that group are changing their patterns. For example, suppose that in 1980, families whose reference person is under age 35 ate mostly meat and a few vegetables at every meal, while single persons under age 35 ate only meat and no vegetables. Suppose further that in 1992, families under age 35 ate less meat and more vegetables, while singles under age 35 continued to eat only meat. Then, in the absence of price changes, the share for consumers under age 35 should rise for vegetables and fall for meat. Yet in this example, only families, and not single persons, reap the benefits of the inclusion of more vegetables in their diet. *Logistic regression*, or *logit*,[48] is used to estimate

the probability that a particular family will purchase a certain type of food, given the family's characteristics. If such an analysis were performed on a group of data described in the current example, the results would likely predict a higher probability of purchasing vegetables for families whose reference person is under age 35 and no change in probability for single persons. Whether the predicted probability of families purchasing vegetables would *actually* increase is an open question. The reason is that it does not matter how much a family purchases: all positive expenditures on vegetables are recorded as a "yes," the family purchased vegetables, on the survey. So if, in 1980, the family purchased a small amount of vegetables every week, and in 1992, it purchased a large amount of vegetables every week, the probability of purchasing vegetables does not change, even though the quantity purchased does. Still, logit analysis offers some insight into food-purchasing patterns. The way the data are collected, an increase in the probability of purchasing suggests that more families are reporting purchases of the food and is thus a good indicator of whether consumption is increasing due to an increase in the number of families that purchase the food, rather than an increase in the number of purchases by families that already consume the food regularly.

Because the logit procedure is a form of regression analy-

Table 5. Food purchases and race of reference person, 1980 and 1992

Item	Race of reference person, 1980			Race of reference person, 1992			Share index	
	White and other	Black	t-statistic	White and other	Black	t-statistic	White and other	Black
Consumer units (thousands)	76,163	9,026	...	88,754	11,328	...	...	...
Income before taxes[1]	$18,601	$12,860	...	$34,486	$24,612	...	...	...
Average number of persons	2.6	2.9	...	2.5	2.7	...	....	...
Age of reference person	46.3	44.4	...	47.6	45.6	...	...	...
Number in consumer unit:								
Persons under age 18	.7	1.1	...	.7	.9	...	...	...
Earners	1.4	1.3	...	1.4	1.3	...	...	...
Average weekly expenditures for:								
Food at home	$33.81	$28.17	...	$22.75	$24.93	...	...	...
Cereal and bakery products	4.35	3.57	...	8.09	6.45	...	...	...
Meat, poultry, fish, and eggs	11.41	11.58	...	13.10	14.14	...	...	...
Dairy products	4.65	2.94	...	6.07	3.69	...	..	...
Fruits and vegetables	5.03	4.07	...	8.39	7.05	...	...	...
Other food at home	8.36	6.01	...	15.37	10.66	...	...	...
Share of food at home (percent):								
Food at home	100.0	100.0	...	100.0	100.0	...	...	...
Cereal and bakery products	12.9	12.7	.15	15.9	15.4	.56	1.06	1.04
Cereal and cereal products	4.1	4.9	–1.29	5.4	6.1	–1.81	1.12	1.06
Bakery products	8.8	7.8	1.25	10.5	[2]9.2	1.99	1.03	1.02
Meat, poultry, fish, and eggs	33.7	[2]41.1	–2.20	25.7	[2]33.7	–5.26	.83	.89
Beef	13.5	11.1	1.74	8.0	8.9	–1.49	.68	.92
Pork	7.0	[2]10.9	–3.38	5.7	[2]8.6	–4.59	.81	.78
Other meats	4.6	5.0	–.65	3.5	4.1	–.75	.83	.90
Poultry	4.2	7.8	–4.41	4.6	[2]6.1	–3.49	1.21	.86
Fish and seafood	2.8	[2]3.8	–2.07	2.8	[2]4.6	–3.70	.89	1.08
Eggs	1.8	[2]2.6	–2.98	1.0	[2]1.3	–3.08	.70	.63
Dairy products	13.8	[2]10.4	2.59	11.9	[2]8.8	5.84	.94	.93
Fresh milk and cream	7.2	6.0	1.36	5.3	[2]3.9	4.09	.84	.74
Other dairy products	6.5	[2]4.4	3.74	6.6	[2]4.9	4.90	1.06	1.16
Fruits and vegetables	14.9	14.4	.28	16.4	16.8	–.39	.90	.95
Fresh fruits	4.4	3.8	1.17	4.9	4.9	–.07	.79	.92
Fresh vegetables	4.3	4.2	.07	4.9	4.6	1.01	.88	.85
Processed fruits	3.5	3.7	–.47	3.8	4.0	–.45	1.00	1.00
Processed vegetables	2.8	2.8	.03	2.8	3.3	–1.44	1.00	1.18
Other food at home	24.7	21.3	1.63	30.1	[2]25.4	3.35	1.31	1.28
Sugar and other sweets	3.5	3.7	–.26	4.0	3.5	1.95	1.20	1.00
Fats and oils	2.9	2.8	.35	2.8	2.8	–.01	1.03	1.06
Miscellaneous foods	8.9	[2]6.9	2.27	15.1	[2]11.7	4.02	1.57	1.57
Nonalcoholic beverages	9.3	8.0	1.50	8.3	7.5	1.51	1.10	1.16

[1] Complete income reporters only.

[2] Difference in shares by race is statistically significant at the 95-percent confidence level.

sis, several demographic characteristics can, in effect, be held constant, and predictions can be made for specific families. For example, the probability that a family in the middle-income group whose reference person is 35 to 64 years old and black purchases fruits and vegetables can be predicted. The characteristics that might be examined in assessing this probability are family income, composition, and size; participation in the food stamp program; whether the family lives in an urban area; the month in which the family participated in the survey (because some food items, such as fresh fruits, may be available only seasonally or, like poultry, may be purchased more frequently at holiday time regardless of other characteristics); and the age, race, and education of the reference person. The number of adults and children (that is, persons less than 18 years old) are included separately as continuous variables, while all other variables are binary. A variable for the square of the number of children is also included to account for potential nonlinear relationships between the number of children and the probability of purchasing a particular food. For example, if milk is deemed a good food for children, but not so important for adults, then a family consisting of a husband and wife with one child is expected to have a much higher probability of purchasing dairy products than a family of only a husband and wife. But a husband and wife with two children is not expected to have a substantially higher probability of purchasing milk than a family with one child.

By using these characteristics, a "standard" or "control" family can be described, against which other families can be compared. For example, if the effect of age on the probability of purchasing is the characteristic to be isolated, one can compare the control family with another family with identical characteristics except for age. In this way, the impact of age on probability can be more carefully measured. For these purposes, the control group is defined as a family

- consisting of a husband, wife, and one child;
- in the middle-income group;
- living in an urban area;
- not participating in the food stamp program;
- participating in the Diary survey in the spring (April, May, or June); and
- whose reference person is 35 to 64 years old, not black, and never attended college.

The predicted probability for each characteristic is shown for 1980 and 1992 in tables 6 through 8. For example, table 6 shows that the probability that a family in the control group purchased cereal and bakery products in 1980 was 95.8 percent. A family whose reference person was under 35, but was otherwise identical to the control family, was 2.8 percent less likely to purchase cereal and bakery products that year. (That is, the probability of that family's purchasing those products in 1980 was 93.0 percent.) In 1992, the control group's probability was down slightly (94.5 percent), but the probability of the family whose reference person was under 35 making such purchases was virtually unchanged (92.7 percent). Presenting the results in this manner facilitates comparisons across time and demographic groups.

The specification of the logit equation is

$$Y = a_1 + a_2 D_{1992} + \Sigma b_i X_i + \Sigma (b_j D_{1992} X_i), \qquad (1)$$

where

Y equals 1 if a purchase occurs and 0 otherwise;
a_i, b_i, and b_j are parameter estimates;
D_{1992} is a dummy variable, coded 1 for 1992 data and 0 for 1980 data; and
X_i is the ith characteristic for each family (for example, age, income level, and so forth).

Using the results of equation (1), tables 6 through 8 show the various probabilities that the control family made a purchase of a certain kind in 1980 and 1992. These probabilities are calculated with the formula

$$P = 1/\{1 + \exp[-1(a_1 + a_2 D_{1992} + \Sigma b_i X_i + \Sigma [b_j D_{1992} X_i])]\}, \qquad (2)$$

where

P is the probability of the family's purchasing a given food; and
all other symbols are as in equation (1).

Thus, from table 6, the probability that a single man who otherwise fits into the control group purchased cereal and bakery products in 1980 is calculated by adding the value of the intercept (2.5555), the parameter estimate for single men (–1.3905), and the parameter estimate for the number of adults in the family (0.1628); summing these factors (which yields 1.3278); multiplying by negative 1 and exponentiating (that is, taking exp[–1.3278]); adding 1 to the result (yielding 1.2651); and taking the reciprocal of this value. After all these operations, P is estimated to be 0.7905, or about 79 percent. If the family consists of a husband and wife only, then the parameter estimate for married couples (–0.2679) is added instead of the value for single males, and the parameter estimate for the number of adults is doubled, because there are two adults present. Similarly, the addition of a child[49] changes the equation, through the change in both the number of children and the square of the number of children, and the family type variable must change accordingly; that is, if the family is in the control group, no family type parameter estimate is added; however, if the family consists of a single parent with children, the parameter estimate for single parents must be included, and the number of adults must be adjusted accordingly. In each case, the results presented in tables 6 through 8 are calculated with the composition of the family taken into account.

Table 6. Probabilities of purchasing cereal and bakery products; beef, pork, and other meats; and poultry, all consumer units, 1980 and 1992

Characteristic	Cereal and bakery products				Beef, pork, and other meats				Poultry			
	Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Control group	3.1358	–0.2949	95.8	94.5	2.0803	–0.3940	88.9	84.4	–0.1277	–0.1660	46.8	42.7
Intercept[1]	[5]2.5555	–.5869	95.9	94.5	[5]1.4871	[5]–.8120	89.0	84.5	[5]–.4477	–.2877	47.1	43.0
Age (35 to 64):												
Under 35	[5]–.5463	[5].2525	93.0	92.7	[5]–.5176	[5].1694	82.7	79.2	[5]–.3302	[5].1916	38.7	39.4
65 and older	[5].3762	–.0603	97.1	95.9	[5].2578	–.1550	91.2	85.7	[5].1924	–.1582	51.6	43.5
Income (middle tercile):												
Lowest tercile	[5]–.2675	–.0369	94.6	92.7	[5]–.2730	[5].2109	85.9	83.5	–.0901	.1706	44.6	44.7
Highest tercile	[5]–.2426	.2076	94.8	94.3	.0598	–.0887	89.5	84.0	–.0631	.1464	45.2	44.8
Incomplete reporter	[5]–.4870	[5].4236	93.4	94.1	[5]–.3645	[5].2788	84.8	83.2	.0027	[5].1883	46.9	47.4
Family composition (husband and wife with children):[2]												
Single man	[5]–1.3905	[5].6076	79.0	81.7	[5]–.9977	[5].8323	67.1	70.0	[5]–.6555	.0483	27.0	23.6
Single woman	.1446	.0938	81.3	85.0	.0546	[5]–.3041	68.3	64.6	.1811	–.1004	30.7	25.1
Husband and wife only	–.2679	.0871	93.2	91.8	–.2090	.2322	84.8	79.8	–.1152	.0278	41.5	38.0
Single parent	[5]–.4383	.2058	92.7	90.9	[5]–.3476	.1052	81.9	75.1	–.1725	.0561	39.9	36.0
Other family	[5]–.4942	–.0825	93.3	90.6	[5]–.3335	.1535	85.2	81.9	.0057	–.1751	47.0	38.6
Family size (two adults, one child):												
Number of adults[3]	.1628	.1478	96.4	95.9	[5].2221	.1171	90.9	88.3	[5].1096	.0567	49.5	46.8
Number of children[4]	[5].2807	–.0138	96.6	95.5	[5].1875	[5].1930	89.6	87.3	[5].1194	–.0081	48.4	45.3
Square of number of children	–.0260	.0102	...	...	[5]–.0385	–.0092	...	...	–.0186	.0164	...	...
Race (white and other):												
Black	–.1586	.1382	95.2	94.4	.0323	.0572	89.2	85.5	[5].6868	[5]–.2538	63.6	53.5
Education (no college):												
Some college	–.0700	–.1941	95.5	92.9	[5]–.2097	–.1445	86.7	79.1	[5]–.1390	.0238	43.4	39.9
College graduate	–.0241	–.1378	95.7	93.6	–.1382	[5]–.3193	87.5	77.4	.0353	+.0890	47.7	41.4
Degree of urbanization:												
Rural	.2018	.0488	96.6	95.7	–.0686	.0316	88.2	83.9	–.0877	–.0697	44.6	38.9
Food stamp program:												
Participates	.2271	–.3786	96.7	93.6	.0071	.0068	89.0	84.6	.0699	–.0272	48.6	43.8
Month surveyed:												
January, February, or March	.0523	–.0068	96.0	94.7	[5]–.1660	.1728	87.2	84.5	–.0667	.1590	45.2	45.0
July, August, or September	.1572	–.1503	96.4	94.5	.0081	.0217	89.0	84.8	–.0306	.1750	46.1	46.3
October, November, or December	–.1070	.1321	95.4	94.6	[5]–.1877	.0886	86.9	83.0	–.0952	.1530	44.5	44.1

[1] Predicted probability is calculated for an increase of 0.01 in the intercept.

[2] Predicted probability is calculated with family size taken into account. For example, a single-person consumer unit consists of one adult and no children. A single-parent consumer unit consists of one adult and one child.

[3] Predicted probability is calculated for a husband and wife with two children, one of whom is at least 18 years old.

[4] Predicted probability is calculated for a husband and wife with two children, both of whom are under 18 years old. Because the increase in the number of children also affects the square of the number of children, the entire change is included in the value listed for the number of children.

[5] Parameter estimate is statistically significant at the 95-percent confidence level.

Calculating results for 1992 is slightly more complicated. The parameter estimates for that year actually represent the *difference* between the expected estimates for 1980 and 1992. Therefore, parameter estimates for 1992 must be added to their 1980 counterparts before a probability for 1992 families can be calculated. Further, calculations for single women require an additional step, regardless of the year. A dummy variable, coded 0 if the consumer unit consists of more than one person and 1 if the consumer unit consists of a single person, is included in each model. A separate dummy variable, coded 0 if the consumer unit consists of more than one person or a single man and 1 if the consumer unit consists of a single woman, is also included in each model. Under this specification, the parameter estimate for the first dummy variable represents the estimated value for single men in 1980. The parameter estimate for single women represents the difference

between the expected estimates for single men and single women in 1980. Therefore, if single women in 1980 are considered, the parameter estimates for single men in 1980 (–1.3905) and single women in 1980 (0.1446) must be added before calculating the probability of purchasing any food item. If single women in 1992 are considered, the parameter estimates for single men in 1980 and 1992 must be added to the parameter estimates for single women in 1980 and 1992 before calculating a probability.

The five major food groups examined in the previous section are too restrictive for the present purpose in some cases. For example, the category of meat, poultry, fish, and eggs contains a mix of items that nutritionists would not consider to be equal in health benefit. Poultry and many varieties of fish and seafood are lower in fat than comparable servings of beef or pork. Eggs are high in saturated fat and cholesterol and are consumed in different ways than other meat products. They may be eaten for their own sake (for example, hard boiled or scrambled), as a major, visible ingredient in other foods (for instance, a spinach soufflé or quiche), or as a not-so-visible ingredient in yet other foods (say, cakes or egg noodles). If kept at the aggregate level, substitutions within the meat, poultry, fish, and eggs group would be missed. So if families were eating less red meat and more poultry, it would appear that the probability of purchasing meat, poultry, fish, and eggs had not changed much, even though the probability of purchasing red meat had declined and the probability of purchasing poultry had increased. For these reasons, the major food groups analyzed are cereal and bakery products; beef, pork, and other meats; poultry; fish and seafood; eggs; dairy products; fruits and vegetables; fats and oils; and other foods (defined as other food at home minus fats and oils).

Before logits are run, families that do not report purchases of groceries (about 11 percent) are omitted from the sample. This is done to avoid bias: if no one in the family buys groceries in the first place, then the probability that the family buys any specific food item is zero. Also omitted are families for whom no Diary placement date could be found (less than 3 percent of the total sample). Placement dates are used to determine the season in which the expenditures are made.

Logistic regressions are not weighted to reflect the population. Preliminary experiments show that weighting does not radically alter the probabilities derived from the parameter estimates, although it does substantially reduce the standard errors associated with the estimates. All but two parameter estimates are statistically significant at the 99-percent confidence level when the weighted regression results are analyzed. Therefore, to err on the side of caution in finding statistically significant results, the regressions are not weighted. Table 9 shows the characteristics of the average family included in the sample for each year. The statistics in the table are unweighted.

General results. For some food groups, such as cereals and bakery products, the predicted probabilities of purchasing them change little over time. For others, such as eggs, the change is dramatic. But the common result seems to be that if one demographic group experiences a change in a certain direction, most other groups do also, at least where parameter estimates are statistically significant.

The control group. Before examining changes by specific segments of the population, changes in the control group's probability of purchasing any item are described, to give a sense of how probabilities are changing for the "average" or "typical" family.

The control group exhibits statistically significant decreases in the probability of purchasing items from four food groups: beef, pork, and other meats (5 percent); fish and seafood (6 percent); eggs (14 percent); and dairy products (4 percent). Changes in probability are not found to be statistically significant for any other food groups.

The foregoing groups contain foods that are high in saturated fat (dairy products), cholesterol (seafood),[50] or both (eggs; and beef, pork, and other meats). The DHKS shows that 54 percent of all main meal planners believe that their diets should be lower in fat, and this may be one reason for the decreased probabilities of purchasing the aforementioned foods. When asked about saturated fat specifically, only 44 percent of respondents to the survey think that their diet should be lower in this food component, compared with 48 percent who think that it is about right. Similarly, when asked about cholesterol, only 41 percent think that their diet should have less of it, compared with 53 percent who think that it is about right.[51]

Age. For families whose reference person is under age 35, many statistically significant changes occurred from 1980 to 1992. Beef, pork, and other meats (4 percent), fish and seafood (5 percent), and dairy products (3 percent) all exhibited moderate decreases in the said family's probability of purchasing them.[52] The family's probability of purchasing poultry rose slightly (1 percent). These findings are consistent with results of the DHKS which indicate that, of all meal preparers, those under age 39 are most likely to believe that their diet should be lower in fat (60 percent) and, specifically, saturated fat (52 percent). The Department of Agriculture's tables show a decreasing relationship between age and percent of meal planners who believe that their diets should be lower in fats.[53] For example, only 41 percent of those 60 years and older believed that their diet should be lower in total fat, and just 34 percent believed that it should be lower in saturated fat.

One possible explanation for this trend is that, as consumers get older, they become more concerned about fat intake

and so lower their consumption accordingly; thus, fewer older consumers think that their diet should be lower in fats. This finding is consistent with DHKS results which show an increasing relationship between the age of the meal planner and the percentage of the group that places a high importance on limiting fat (especially saturated fat) and cholesterol intake.[54] But this explanation is not consistent with the logit result that families 65 and older were more likely to purchase beef, pork, and other meats; poultry; eggs; dairy products; and fats and oils than were younger families in both years. However, the esti-

Table 7. Probabilities of purchasing fish and seafood; eggs; and dairy products, all consumer units, 1980 and 1992

Characteristic	Fish and seafood				Eggs				Dairy products			
	Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Control group	–0.5714	–0.2795	36.1	29.9	.4102	–0.5722	60.1	46.0	3.1674	–0.6809	96.0	92.3
Intercept[1]	[5]–.8459	[5]–.4739	36.3	30.1	.0904	[5]–.9378	60.4	46.2	[5]2.6929	[5]–1.0167	96.0	92.4
Age (35 to 64):												
Under 35	[5]–.2079	.0237	31.4	26.2	[5]–.3154	.1282	52.4	41.4	[5]–.5215	[5].3387	93.4	90.9
65 and older	[5].2040	–.1020	40.9	32.1	[5].2277	–.0944	65.4	49.3	[5].3175	.0286	97.0	94.4
Income (middle tercile)												
Lowest tercile	[5]–.1444	.1643	32.8	30.3	–.0482	.0102	59.0	45.0	[5]–.2691	.0126	94.8	90.3
Highest tercile	.0763	–.0131	37.9	31.3	.0359	–.0622	61.0	45.3	.1795	–.1209	96.6	92.7
Incomplete reporter	–.0709	.1407	34.5	31.4	[5]–.1587	[5].2635	56.3	48.6	[5]–.2399	[5].2737	94.9	92.6
Family composition (husband and wife with children):[2]												
Single man	[5]–.5233	.0701	22.2	17.0	[5]–.7515	.2944	35.5	25.4	[5]–1.3349	[5].7175	80.8	78.6
Single woman	.0113	.0892	22.4	18.4	–.0518	.1732	34.3	27.8	[5].1994	–.0021	83.7	81.7
Husband and wife only	–.1500	.1180	31.7	27.2	–.1094	.0951	52.6	39.9	–.2760	.2800	92.9	89.7
Single parent	–.1369	–.1187	30.5	21.6	[5]–.2837	.2531	51.6	39.7	–.3580	.4545	93.9	91.2
Other family	[5]–.1652	–.0152	32.4	26.3	–.0753	–.0649	58.3	42.5	[5]–.3944	.0569	94.1	89.6
Family size (two adults, one child):												
Number of adults[3]	[5].1130	.0715	38.7	33.9	.0621	[5].1645	61.6	51.6	.0805	.1601	96.3	93.9
Number of children[4]	.0534	.0479	37.0	32.0	[5].2263	.0335	63.3	50.4	[5].3777	–.0120	96.6	93.9
Square of number of children	–.0049	.0035	...	...	[5]–.0307	.0031	...	...	[5]–.0642	.0276	...	...
Race (white and other):												
Black	[5].2511	–.0254	42.1	34.9	–.0032	.0821	60.0	47.9	[5]–.6210	–.0551	92.7	85.9
Education (no college):												
Some college	.0487	–.0307	37.2	30.3	–.0302	–.0869	59.4	43.1	–.0644	–.1446	95.7	90.7
College graduate	[5].2059	.0518	41.0	35.6	.0732	[5]–.3388	61.9	39.5	.0360	–.1591	96.1	91.4
Degree of urbanization:												
Rural	[5]–.3414	.1737	28.6	26.5	[5]–.2426	.1732	54.2	44.2	–.0211	.1447	95.9	93.2
Food stamp program:												
Participates	.1222	–.1586	39.0	29.2	[5].1889	.0712	64.5	52.5	.1602	[5]–.4159	96.5	90.3
Month surveyed:												
January, February, or March	[5].1879	–.0827	40.5	32.2	.0838	–.0213	62.1	47.5	–.0881	.2138	95.6	93.2
July, August, or September	–.0061	.0033	36.0	29.9	.0512	.0199	61.3	47.7	.0052	.1469	96.0	93.3
October, November, or December	[5]–.1325	.1047	33.1	29.3	.0836	.0505	62.1	49.3	–.1157	.0646	95.5	91.9

[1] Predicted probability is calculated for an increase of 0.01 in the intercept.

[2] Predicted probability is calculated with family size taken into account. For example, a single-person consumer unit consists of one adult and no children. A single-parent consumer unit consists of one adult and one child.

[3] Predicted probability is calculated for a husband and wife with two children, one of whom is at least 18 years old.

[4] Predicted probability is calculated for a husband and wife with two children, both of whom are under 18 years old. Because the increase in the number of children also affects the square of the number of children, the entire change is included in the value listed for the number of children.

[5] Parameter estimate is statistically significant at the 95-percent confidence level.

mated probabilities of purchasing these foods for families in the 65-and-older age category at least were lower in 1992 than they were in 1980.[55]

Eggs are particularly interesting to study. Older families showed a large decrease (16 percent) in the probability of purchasing eggs, while younger families exhibited a smaller, but still notable, decrease (11 percent) over the 2 survey years. However, older families were more likely to purchase eggs regardless of the year (65 percent in 1980 and 49 percent in 1992) than either the control group (60 percent and 46 percent) or younger families (52 percent and 41 percent). The difference may reflect the difficulty of breaking lifelong habits. Overwhelming majorities of main meal planners are aware of the relationships between fat and cholesterol intakes and health problems.[56] For example, regardless of age, more than three-fourths of respondents had heard that fat intake is related to health problems. More than 6 out of 10 had heard that saturated fat intake, in particular, is related to health problems. Similarly, 7 out of 8 of those under 60 (and nearly as many at least age 60) responded that they were aware of a relationship between health problems and cholesterol. When asked specifically which health problem they had heard about being related to fat or cholesterol intakes, once again, large majorities mentioned heart disease. But the older family members grew up when eggs were considered a quintessential part of any healthful breakfast, while the younger family members grew up hearing about the relationship of cholesterol to heart disease. So, if the younger families are raising their children to be concerned about egg consumption, the relationship of egg consumption to age will probably continue; that is, all families will decrease consumption, but older families will continue to purchase eggs more frequently than younger families, with the gap between older and younger families continuing to shrink. (The difference in the probability of purchasing eggs between older and younger families was 13 percent in 1980, but only 8 percent in 1992.)

One bright spot for older consumers is that they have a higher probability of purchasing fruits and vegetables than younger consumers have. In 1980, the predicted probability of older consumers purchasing food from this group (94 percent) was 4 percentage points higher than that of the control group and 11 percentage points higher than that of the under-35 group. There is no indication that the predicted probabilities changed from 1980 to 1992 for any age group.

Income. Relations are less strong by income group than by age group. Middle- and high-income families appear to have similar probabilities. For no food group is the high-income parameter estimate statistically significant, regardless of year.

But for some food items, low-income families had significantly different probabilities from other income groups. Low-income families were slightly less likely (by 1 percent) to purchase cereal and bakery products than were control group families, at least in 1980. They were also less likely to purchase fish and seafood (by 3 percent), dairy products (1 percent), fruits and vegetables (2 percent), fats and oils (8 percent), and other foods (1 percent) than the control group was in 1980. However, only for beef, pork, and other meats was their probability statistically significantly lower than the control group's in both 1980 (3 percent) and 1992 (1 percent). The DHKS results show a smaller spread across income groups in concerns about fat and cholesterol intake than they do for age groups,[57] so it is not surprising that there is very little difference in probabilities of purchasing among income groups. Similarly, the spread across income groups in the percentage of each group that thinks its fiber intake is about right (2 percent) is much less than that for age groups (24 percent).[58]

Gender. For the most part, probabilities of purchasing food do not differ significantly by gender. Further, single women do not have many coefficients that are statistically significant. In fact, the only statistically significant difference they exhibit is for purchasing beef, pork, and other meats. Single men showed a statistically significant increase in the probability of purchasing these foods, from 67 percent in 1980 to 70 percent in 1992. By contrast, single women exhibited a decrease from 68 percent to 65 percent. Single women were more likely to purchase fats and oils in 1980 than single men were (the predicted probabilities were 36 percent and 29 percent, respectively), and neither group showed a statistically significant decrease from these percentages in 1992. The DHKS shows that women are slightly more concerned about fat intake than are men.[59] For example, 55 percent of female meal preparers believe that their diet should be lower in total fat, compared with 52 percent of male meal preparers. Similarly, 42 percent of female preparers believe that their intake of cholesterol should be reduced, compared with 39 percent of male preparers. Slightly more than half of each group think that their intake is about right, but still, a larger percentage of female preparers (53 percent) than male preparers (51 percent) agrees with that statement.

Other differences within and across time are worth noting. For example, single women had a higher probability of purchasing dairy products in 1980, although both single women and single men had lower probabilities in 1992. (Only the men's decline, however, was statistically significantly.) Far more women (41 percent) than men (25 percent) believe that their diets need more calcium,[60] and this belief may be a factor in explaining the difference.

Also, single men appear to have a substantially lower probability of purchasing fruits and vegetables than single women have, regardless of the year. (The parameter estimates for single men and women were statistically significant in 1980, but not in 1992. This finding indicates that single men and

Table 8. **Probabilities of purchasing fruits and vegetables; fats and oils; and other foods, all consumer units, 1980 and 1992**

Characteristic	Fruits and vegetables				Fats and oils				Other foods			
	Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)		Parameter estimate		Predicted probability (percent)	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Control group	2.1767	0.0546	89.8	90.3	0.2866	–0.0652	57.1	55.5	2.5529	0.4246	92.8	95.2
Intercept[1]	[5]1.4008	.1546	89.9	90.4	–.2612	.1620	57.4	55.8	[5]1.7735	.3610	92.8	95.2
Age (35 to 64):												
Under 35	[5]–.5749	.1145	83.2	85.5	[5]–.3041	–.0947	49.6	45.6	[5]–.1627	.1397	91.6	95.0
65 and older	[5].5780	.1751	94.0	95.2	[5].2651	–.1133	63.5	59.2	–.1022	.2504	92.1	95.8
Income (middle tercile):												
Lowest tercile	[5]–.2408	.0413	87.4	88.4	[5]–.2019	.1087	52.1	53.2	–.0340	[5]–.2761	92.5	93.5
Highest tercile	.1258	.1232	90.9	92.3	.0144	–.0075	57.5	55.7	.1174	–.1838	93.5	94.8
Incomplete reporter	[5]–.2616	.1655	87.2	89.4	[5]–.2136	.1559	51.8	54.1	[5]–.5344	.0974	88.3	92.7
Family composition (husband and wife with children):[2]												
Single man	[5]–.7800	.0827	71.6	75.1	[5]–.8205	.0995	29.3	32.2	[5]–.7289	.1805	79.0	86.0
Single woman	[5].5454	.0349	81.3	84.3	[5].3145	–.0782	36.2	37.5	.1090	.1779	80.8	89.1
Husband and wife only	.0223	–.0233	88.4	88.5	–.1349	[5].2906	50.2	55.1	[5]–.3119	.2528	88.3	92.6
Single parent	–.0221	–.1153	86.4	86.4	[5]–.3719	.0480	42.9	45.6	–.3273	.1244	87.5	92.7
Other family	–.1069	–.0920	88.8	88.4	[5]–.2279	.0715	51.5	51.6	[5]–.5403	[5].4517	88.2	94.7
Family size (two adults, one child):												
Number of adults[3]	[5].3027	–.0580	92.3	92.2	[5].2019	[5]–.1280	62.0	57.3	[5].2812	–.0529	94.4	96.1
Number of children[4]	[5].1906	.0081	90.9	91.6	[5].1566	.0403	60.0	58.6	[5].2465	.1998	93.8	96.2
Square of number of children	–.0201	.0079	...	...	–.0126	–.0115	...	...	–.0295	–.0304	...	...
Race (white and other):												
Black	[5]–.1822	.1956	88.0	90.4	[5]–.2168	.1464	51.7	53.8	[5]–.4001	–.0614	89.6	92.5
Education (no college):												
Some college	.0933	[5]–.2226	90.6	89.1	.0093	[5]–.2030	57.3	50.7	.1561	–.1286	93.8	95.3
College graduate	[5].3670	–.1054	92.7	92.4	.0271	[5]–.1678	57.8	52.0	.1000	.0247	93.4	95.7
Degree of urbanization:												
Rural	[5]–.2467	[5].2872	87.3	90.7	[5].1941	–.0620	61.8	58.7	–.0436	[5].3348	92.5	96.3
Food stamp program:												
Participates	[5]–.2500	.0129	87.3	88.0	–.1209	.0281	54.1	53.2	–.0722	–.0040	92.3	94.8
Month surveyed:												
January, February, or March	–.0445	–.0015	89.4	89.9	[5].2225	[5]–.2519	62.5	54.8	.1290	–.1662	93.6	95.0
July, August, or September	.1069	–.0444	90.8	90.8	[5].1400	–.0899	60.5	56.7	[5].1906	[5]–.3147	94.0	94.5
October, November, or December	–.0803	–.0775	89.1	88.8	.0382	.0322	58.0	57.2	.1640	–.2192	93.8	94.9

[1] Predicted probability is calculated for an increase of 0.01 in the intercept.

[2] Predicted probability is calculated with family size taken into account. For example, a single-person consumer unit consists of one adult and no children. A single-parent consumer unit consists of one adult and one child.

[3] Predicted probability is calculated for a husband and wife with two children, one of whom is at least 18 years old.

[4] Predicted probability is calculated for a husband and wife with two children, both of whom are under 18 years old. Because the increase in the number of children also affects the square of the number of children, the entire change is included in the value listed for the number of children.

[5] Parameter estimate is statistically significant at the 95-percent confidence level.

women had different probabilities of purchasing fruits and vegetables in 1980, but that single men cannot be said with an acceptable degree of statistical confidence to have had a different probability of purchasing the same than single women had in 1992. Further, the change over time in the probability of singles purchasing fruits and vegetables is statistically significant, regardless of gender.) In 1980, the probability of single men purchasing fruits and vegetables was 72 percent, compared with 81 percent for single women. In 1992, the figures were 74 percent and 85 percent, respectively. So, although in 1992, single men appear to have purchased fruits and vegetables more frequently than they did in 1980, they still ap-

pear not to have caught up to the frequency with which single women purchased items from this food group in 1980. Even so, about 54 percent of male meal preparers and 55 percent of female meal preparers believe that they are getting adequate fiber. About the same amount of men (38 percent) and women (39 percent) believe that they should consume more fiber.[61] By contrast, women are more likely to believe that they are consuming adequate amounts of vitamin C (62 percent) than men are (57 percent). However, about one-third of each group believe that their diet should be higher in vitamin C. (Approximately 9 percent of men either did not know whether their diet was adequate in vitamin C, did not answer the question, or thought that their intake of vitamin C should be lower, compared with 4 percent of women.)

Race. There do not appear to be any changes across time in the probability of purchasing food that can be linked to race. Only poultry has a statistically significant coefficient for race, in 1992. Therefore, except for poultry, black families' probabilities of purchasing food in 1992 were not statistically distinguishable from those of white and other families in that year. However, black families were more likely to purchase fish and seafood, and less likely to purchase dairy products, fruits and vegetables, fats and oils, and other foods, than the control group was, at least in 1980.

Although this relationship leads to no discernible pattern by race, there are clear differences in nutritional attitudes by race. For example, about 8 percent more black meal preparers believe that their diet should be lower in fat and cholesterol than do white meal preparers.[62] Also, more black meal preparers (44 percent) than white meal preparers (39 percent) believe that their diet should be higher in fiber. However, blacks are less likely to be aware of the relationship between health problems and certain foods. For example, 68 percent of black meal preparers associated fat intake with health problems, compared with 80 percent of white meal preparers; and 54 percent of black meal preparers named heart disease as an illness related to fat intake, compared with 67 percent of white meal preparers.[63] Similarly, 6 out of 8 black meal preparers had heard of links between cholesterol and health problems, compared with 7 out of 8 white meal preparers.[64] Clearly, the link between knowledge of nutrition and expenditures by race warrants further investigation.

Family size and composition. Although the DHKS does not provide information on the size of the meal preparer's family or the meal preparer's marital status, it is nonetheless interesting to examine expenditures for families of differing size and composition.

Single persons have smaller probabilities of purchasing specific goods than the control group has. This is to be expected, because the control group consists of married couples with one child. With families, there are more members to be satisfied, and the more members present, the more likely is the probability of purchasing different items, for two reasons: first, families may consume certain foods more quickly than singles do, so that they need to replace these foods more frequently; and second, more family members means more tastes for the shopper to satisfy.

But how much does the addition of a child to a family change the probabilities, compared with an adult? For some goods, the answer is "not much." For example, the probability of purchasing cereal and bakery products was about 93 percent for the single-parent family in 1980, compared with 96 percent for the control group. Adding one child to a control group family raises the probability to 97 percent. But if an adult instead of a child is added to the control group family, there is no statistically significant difference produced by the addition. Further, there is no evidence to support a change in these patterns for 1992.

For other expenditures, the differences are more noticeable. For instance, married couples with no children show a smaller decrease (4 percent) than the control group does in the probability of purchasing fish and seafood, while other families show a decrease similar to that of the control group. Single parents show a larger decline (9 percent). Married couples with no children and single parents have a smaller probability of purchasing fish and seafood than the control group has in both 1980 and 1992. For other families, the probability is about the same as that of the control group in 1980, but is smaller than the probability of the control group in 1992.

Other characteristics. Most of the other characteristics tested (degree of urbanization, participation in the food stamp program, and month surveyed) show few statistically significant parameter estimates and no real discernible patterns. However, one characteristic warrants a brief mention: education. It seems reasonable to assume that, the more educated a person is, the more exposure the person has had to issues involving health and nutrition. Therefore, one could expect to observe some differences in expenditure patterns for persons with different levels of education. Indeed, some such differences are observed in the logit results. For example, the probability of purchasing beef, pork, and other meats decreases substantially—about 10 percentage points—for college graduates from 1980 to 1992.[65] Families whose reference person is a college graduate also show declines in the probability of purchasing eggs and fats and oils. Once again, the DHKS results show that meal preparers with at least some college are more likely to believe that their diets should be lower in total fat (including saturated fat) than meal preparers with less education believe.[66] Those with at least some college are also much more aware of relationships between the intake of certain nutrients and health problems.[67] For example, 86 percent of those

with some college are aware of links between total fat intake and health problems, compared with 73 percent of those whose last grade attended was any of grades 9 through 12 and 67 percent of those whose last grade attended was grade 8 or lower. Similarly, more than 9 out of 10 meal preparers with some college were aware of the relationship between cholesterol intake and health problems, compared with 8 out of 10 whose highest grade attended was high school and 7 out of 10 whose highest grade attended was grade 8 or lower.

Income elasticities

One important economic measure is income elasticity. In this article, income elasticity is used to show by what percent expenditures for a selected food group are expected to increase, given a 1-percent increase in income. An increase in income elasticity over time indicates that it takes less of an increase in income to induce a purchase of a particular item than it did before. Also important, but not estimated here, are price elasticities, which show the effect of a 1-percent increase in price on expenditures for a commodity. In addition, price elasticities show whether goods are complements of, or substitutes for, each other. (For example, if expenditures for coffee decrease when tea prices fall, the goods are substitutes.) The reason price elasticities are not estimated in what follows is that the Consumer Expenditure Survey lacks data on prices.[68] However, the analysis that is presented does control for price changes over time.

Income elasticity can be estimated by using regression results. However, before regressions can be performed, several factors must be taken into account.

First, if prices for selected food items change at a different rate than incomes, changes in income elasticities will not be accurately measured. For instance, if prices rise faster than incomes, it may appear that a given expenditure has increased for the same level of income, yet the family may actually be consuming less of the product. For this reason, both expenditures and incomes are adjusted for inflation before one performs a regression. To achieve these adjustments, each individual expenditure is divided by the level of the CPI for that item in the appropriate year, with the resulting "real" expenditures aggregated to the food group level. Thus, 1980 expenditures for apples are divided by 0.921 before being added to (real) expenditures for other fruits and vegetables. (The appendix to this article has a complete listing of individual foods and the deflators for each year.) Income is divided by the CPI for all goods and services. By regressing real expenditures on real income (with base year 1982–84), a "real" Engel curve is estimated. The estimated relationship between income and expenditures is then used to calculate income elasticities.

Second, a method of regression must be selected. Although all families buy food at home of some type at some time or another, not all families buy each kind of food all the time.

Table 9. Characteristics of families included in logistic regressions

Variable	1980	1992
Number		
Sample	9,055	10,186
Adults	1.9	1.9
Persons less than age 18	.8	.8
Percent		
Age:		
Under 35	33.6	28.0
65 and older	19.3	20.7
Income group:		
Low income	27.6	23.9
High income	27.2	29.4
Incomplete reporters	18.1	19.9
Type of family:		
Single man	9.9	10.0
Single woman	16.1	14.5
Husband and wife only	21.7	21.9
Single parent	5.0	6.1
Other family	12.8	16.3
Race:		
Black	11.7	9.7
Education:		
Some college	21.2	23.3
College graduate	18.6	25.4
Degree of urbanization:		
Rural	12.5	10.6
Food stamp program:		
Participant	7.4	7.5
Month surveyed:		
January, February, or March	21.3	24.6
July, August, or September	23.0	21.3
October, November, or December	34.3	32.1
Reporting purchases of:		
Cereal and bakery products	88.1	89.2
Beef, pork, and other meats	74.9	73.0
Poultry	38.9	40.1
Fish and seafood	31.2	28.5
Eggs	50.8	40.2
Dairy products	88.0	87.0
Fruits and vegetables	83.9	86.8
Fats and oils	48.5	46.0
Other food at home	87.5	91.2

Some families would choose not to purchase some kinds of foods, even if they were available for very low prices or even if they were given away free of charge. Unfortunately, there is no way to identify whether families are true nonconsumers of a certain food or whether they just did not happen to purchase the food during the survey's 2-week reference period for some other reason. If conventional ordinary least squares regressions are run only on families with positive expenditures, biases will result, because some "would-be" purchasers are thrown out with the "never" purchasers. Several methods are available to adjust for this problem. The method used in this article is the Heckman two-stage procedure.[69] In this method,

a probit regression is run to estimate the probability that a family would purchase the food in question. Results of this regression are manipulated to create a variable, called the inverse of Mill's ratio. The second stage is an ordinary least squares regression of expenditures for those who made a purchase on selected variables, including the inverse of Mill's ratio. One major advantage of the Heckman procedure over its competitors (such as Tobit models) is that the variables can differ from the first to the second stage, making the Heckman procedure much more flexible. Because the second stage is performed using ordinary least squares, the coefficients are directly interpretable; no adjustment is necessary before using them in further analysis, as would be necessary with Tobit models.[70]

Third, once a model is selected, it is important to make sure that relevant coefficients are unbiased and efficient. Because income data are often found to be nonnormally distributed, some correction for heteroskedasticity is in order. Accordingly, the income data in the second stage are subjected to a Box-Cox transformation,[71] the standard formula for which is

$$X(\lambda) = (X^{\lambda} - 1)/\lambda,$$

where

X is the variable to be transformed (income before taxes in this case) and

λ is a parameter obtained through estimation.

However, as Box and Cox point out, the variable need only be raised to the power of λ if it is to be used in a regression.[72] For convenience in interpreting results, this simplification is used. In these models, the value of λ, estimated by using a maximum-likelihood technique described by Scott and Rope,[73] is found to be one-fourth. Therefore, in the second stage, instead of regressing expenditures directly on income, expenditures are regressed on the fourth root of income.

Fourth, not all families provide information on even one major source of income. For this reason, the sample is limited to complete income reporters before λ is estimated and before first- or second-stage regressions are run. Because the focus of the analysis set forth in this article is contingent upon having appropriate income values, omitting the incomplete reporters from the regression is presumably the best solution to the problem. This omission eliminates the excess variation that would result from their inclusion; the only other solution would be to greatly complicate the regression equation by adding appropriate main effects and interaction terms to control for this variation.

Finally, results from the probit stage are not shown. In general, logit and probit regressions yield similar results. Because the same variables are used in the probit stage and in the logit regressions already described, providing both sets of estimates would be duplicative.[74] Also, only the most important second-stage results (that is, those dealing with the expenditure-income relationship) are shown in table 10.[75]

The models. The probit model is identical to the logit model described earlier; the same dependent and independent variables are used in all cases. The second-stage model differs only slightly. First, instead of utilizing a dichotomous dependent variable, the second stage uses a continuous dependent variable (that is, the actual level of expenditures for the food group under study). Second, instead of using binary variables to represent income classes, a continuous income variable is employed (after being transformed as described above). With this variable, one can still estimate income elasticities for each income group (low, middle, or high) by evaluating each elasticity using the mean income for each group. Additionally, the second stage includes several interaction terms used to evaluate whether income elasticities are different both across demographic groups and across time. The interactions are limited to the most basic demographic differences, including age, gender (single male and single female), and race.

Estimating income elasticity. The definition of income elasticity is the ratio of the percent change in quantity purchased to the percent change in income. (In this article, "real" expenditure is used as a proxy for quantity purchased, as described earlier.) Although income elasticities can be positive or negative, in general, they are positive; therefore, goods with positive elasticities are often called "normal" goods. (Those with negative elasticities are often called "inferior" goods.) The larger the absolute value of the elasticity, the more responsive the good or service is to a change in income.

The formula for income elasticity is

$$\eta = \partial Y/\partial I \times I/Y,$$

where

$\partial Y/\partial I$ is the rate of change of the expenditure with respect to income;

I is the level of income at which elasticity is evaluated; and

Y is the level of the real expenditure at which elasticity is evaluated.

Because a Box-Cox transformation is used on income before the regression is carried out, the value of $\partial Y/\partial I$ is found as follows:[76]

$$Y = a + bI^{0.25};$$

$$\partial Y/\partial I = 0.25bI^{-0.75}.$$

The elasticity then becomes

$$\eta = 0.25bI^{-0.75}\, I/Y.$$

Simplifying yields

$$\eta = (0.25bI^{0.25})/Y.$$

Results. Table 10 shows the income elasticities derived from the second stage of the regression, plus other information. The first two columns present real weekly expenditures in 1980 and 1992 for purchasers of the food item in each demographic group. The next two columns show the percentage of each demographic group reporting an expenditure for the food item in question. For example, of the 2,655 consumer units in the under-35 age group in 1980 who reported purchasing food at home, 2,214, or about 83 percent, included cereal and bakery products in their grocery baskets. The third set of columns shows real annual income (that is, income before taxes, divided by the Consumer Price Index for all goods and services) in 1980 and 1992, by demographic group. The next set of columns shows the estimated income parameters for each group in each year. (For convenience, all interaction terms have been added as appropriate before inserting them into the tables; see the section titled "Logistic regression results," above, for more details.)

The income elasticities shown in the table require a bit more explanation. According to the formula derived earlier, income elasticity is dependent on both the level of income and the level of expenditure in each year. If these have changed for some reason, how can one be certain that differences in observed elasticities are due to changes in tastes or other factors influencing expenditures, and not just differences in incomes? To correct for this problem as much as possible, real expenditures and real incomes are averaged for each group across time before using them in the income elasticity equations. In that way, differences in elasticity are due solely to differences in the income parameter estimates.

As with the logit models, many parameters are based on interactions across characteristics as well as time and must be added appropriately before calculating elasticities. The parameter estimates are accompanied by footnotes designating their statistical significance. Parameter estimates are considered to be statistically significant on the basis of standard *t*-test results. To say that an estimate is statistically significant means that it is significantly different from zero before addition.[77]

Elasticities calculated from these parameter estimates are analyzed for statistical significance in a different way. The first part of the elasticity equation ($\partial Y/\partial I$) is calculated by adding parameters appropriately, regardless of their statistical significance. Elasticities in 1980 are considered to be statistically significantly different from zero if the sum of the 1980 parameter estimates does not differ significantly from zero according to an *F*-test. Elasticities in 1992 are analyzed to see whether they are statistically significantly different from the 1980 elasticities, rather than from zero. (That is, if the difference between the estimated effects for 1980 and 1992 is statistically significant according to an *F*-test, the difference in elasticities is considered to be statistically significant.)

General observations. As expected, the individual food categories are income inelastic in each year; that is, a 1-percent increase in income yields an increase of less than 1 percent in expenditures for each individual food category. Even so, the food categories can be placed into three distinct groups: those for which elasticities increase over time for most groups (cereal and bakery products, fish and seafood, and other food at home); those for which elasticities were positive in 1980 for most groups and do not change over time (beef, pork, and other meats; dairy products; and fruits and vegetables); and those for which elasticities were statistically indistinguishable from zero, regardless of the year (poultry, eggs, and fats and oils). Expenditures in the last group are called "perfectly inelastic," indicating that quantities purchased do not change with income. Expenditures in the other groups are called "necessities," because their elasticities are greater than zero, but less than unity. Those with elasticities less than zero are called "inferior," because a negative elasticity means that expenditures *decrease* as income increases. Although some predicted elasticities fit this category, they are not statistically distinguishable from zero, as noted above. No "luxury" foods (those with elasticities greater than unity) are found. In only one case is a decrease in elasticity found to be statistically significant: fruits and vegetables purchased by families whose reference person is older than 65. Even here, though, the change is just barely significant at the 90-percent confidence level.

Those expenditures with increasing elasticities are especially interesting. The increasing elasticity indicates that the Engel curve has become steeper over time, which, in turn, indicates that it took a smaller increase in income to induce a purchase of the good in 1992 than it did in 1980, at least for the demographic group under study. The best example of this phenomenon is other food at home, which shows an increase in elasticity for almost every demographic group. As mentioned earlier, this is not surprising, due to the ever-changing nature of society. The category contains a substantial amount of "convenience" foods, such as frozen foods and prepackaged meals. Again, the rise of two-earner families, the proliferation of a variety of frozen meals since 1980, and increased ownership of microwave ovens undoubtedly contribute to the increased elasticity of frozen meals.

Age. For most food expenditures, elasticity varies little with age. For example, for cereal and bakery products, estimated elasticities range only from 0.10 (for those under 35) to 0.14 (for those 65 and older) in 1980. In 1992, only the middle group (aged 35 to 64) shows a statistically significant increase in elasticity, although the range of predicted elasticities is –0.18 to 0.19.

But some differences are worth noting. A substantial gap

Table 10 Income elasticity estimates and related information, Heckman second-stage results, complete reporters only, 1980 and 1992

Characteristic	Real weekly expenditures[1]		Percent reporting[2]		Real annual income		Parameter estimate $I = (I^{0.25})$		Income elasticity[3]	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Cereal and bakery products										
Age of reference person:										
Under 35	$5.81	$5.83	83.4	85.5	$21,466	$22,883	[4]0.186	[5]0.341	[4].10	0.18
35 to 64	7.77	7.46	91.8	90.6	28,251	32,508	[5].277	[5].423	[5].12	[4].18
65 and older	5.02	5.67	90.3	90.0	11,583	16,167	[5].284	[5].369	[5].14	.19
Income group:										
Low	4.80	5.06	83.7	84.9	6,709	7,161	[5].277	[5].423	[5].13	[4].20
Middle	6.57	5.98	90.1	89.8	18,961	18,684	[5].277	[5].423	[5].13	[4].20
High	8.26	8.37	91.7	91.6	41,481	47,586	[5].277	[5].423	[5].12	[4].18
Single person:										
Man	3.33	3.59	73.3	77.6	13,309	17,964	.068	[5].277	.05	.22
Woman	3.24	3.77	78.0	82.7	8,820	12,633	.065	[5].308	.05	.22
Race of reference person:										
Black	5.69	5.67	87.6	87.3	15,380	19,097	.086	−.014	.04	−.01
White or other	6.71	6.72	88.6	89.2	23,835	27,113	[5].277	[5].423	[5].13	[4].20
Beef, pork, and other meats										
Age of reference person:										
Under 35	11.98	9.39	66.7	67.4	22,756	22,729	[4].582	.087	[4].17	.02
35 to 64	15.82	11.37	81.5	76.1	28,751	32,438	[5].571	.236	[5].14	.06
65 and older	10.10	9.03	77.3	73.3	12,013	15,979	[5].969	.409	[5].28	.12
Income group:										
Low	9.27	8.86	66.4	69.1	6,884	7,294	[5].571	.236	[5].14	.06
Middle	13.94	10.14	77.0	73.3	19,098	18,750	[5].571	.236	[5].14	.06
High	16.58	11.63	83.0	75.9	41,527	47,096	[5].571	.236	[5].15	.06
Single person:										
Man	6.93	6.25	53.4	60.7	14,811	17,343	.289	.481	.12	.21
Woman	6.01	5.96	58.3	57.7	9,011	12,075	−.036	205	−.02	.09
Race of reference person:										
Black	13.48	12.08	75.1	74.9	15,993	18,966	.483	.200	.11	.04
White or other	13.54	10.16	75.5	72.8	24,740	27,182	[5].571	.236	[5].15	.06
Poultry										
Age of reference person:										
Under 35	4.58	4.59	32.4	36.2	22,113	24,321	.103	.043	.07	.03
35 to 64	5.22	5.57	42.4	41.6	28,622	33,127	.033	[6].090	.02	.06
65 and older	3.76	4.54	40.5	37.7	11,424	17,620	.182	−.006	.12	.00
Income group:										
Low	4.05	4.45	35.3	36.3	6,827	7,206	.033	[6].090	.02	.05
Middle	4.72	4.75	39.1	37.4	19,053	18,806	.033	[6].090	.02	.06
High	5.37	5.82	41.1	43.3	41,707	48,429	.033	[6].090	.02	.06
Single person:										
Man	3.31	4.40	23.4	24.5	13,575	23,082	−.017	[5].283	−.01	.21
Woman	3.26	3.54	29.1	27.7	8,743	11,843	.012	[4].277	.01	.21
Race of reference person:										
Black	5.07	5.02	51.3	50.3	15,872	19,385	−.148	.053	−.08	.03
White or other	4.68	5.11	36.3	38.1	24,844	28,795	.033	[6].090	.02	.06
Fish and seafood										
Age of reference person:										
Under 35	3.56	3.38	27.2	25.0	22,382	24,148	.065	[4].238	.06	.21
35 to 64	4.65	4.35	34.6	30.3	30,483	36,498	.114	[5].439	.09	[4].33
65 and older	3.56	3.67	30.9	27.2	12,851	16,932	[6].474	[6].394	[6].36	.30
Income group:										
Low	3.09	3.18	26.0	24.0	6,937	7,226	.114	[5].439	.08	[4].32
Middle	4.12	3.40	31.1	26.7	19,554	18,793	.114	[5].439	.09	[4].34
High	4.83	4.84	36.8	32.7	41,842	50,138	.114	[5].439	.09	[4].33
Single person:										
Man	3.93	3.10	20.3	18.1	15,126	21,060	.268	[5].476	.22	.39
Woman	2.86	2.72	21.8	19.9	8,839	12,823	−.031	[6].340	−.03	.31

Table 10. Continued—Income elasticity estimates and related information, Heckman second-stage results, complete reporters only, 1980 and 1992

Characteristic	Real weekly expenditures[1]		Percent reporting[2]		Real annual income		Parameter estimate $I = (P^{.25})$		Income elasticity[3]	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Race of reference person:										
Black	4.28	4.41	35.9	31.4	16,610	21,117	.041	[4].336	.03	.23
White or other	4.09	3.91	30.7	27.8	26,041	30,330	.114	[5].439	.09	[4].36
Eggs										
Age of reference person:										
Under 35	1.51	1.26	45.7	36.0	23,014	22,627	–.040	.004	–.09	.01
35 to 64	1.78	1.47	56.0	41.9	29,060	31,280	.001	.040	.00	.08
65 and older	1.47	1.41	50.3	38.6	12,474	16,816	–.014	–.013	–.03	–.02
Income group:										
Low	1.55	1.40	44.7	36.6	6,930	7,272	.001	.040	.00	.06
Middle	1.61	1.36	51.3	39.6	19,159	18,744	.001	.040	.00	.08
High	1.73	1.44	57.8	41.6	41,966	45,668	.001	.040	.00	.09
Single person:										
Man	1.18	1.10	32.6	23.9	14,244	17,780	–.001	.030	.00	.07
Woman	1.14	1.46	34.3	27.2	8,986	11,855	.064	.116	.12	.23
Race of reference person:										
Black	1.89	1.41	52.6	43.2	16,116	19,059	–.010	–.006	–.02	–.01
White or other	1.60	1.40	51.1	39.1	25,254	26,845	.001	.040	.00	.08
Dairy products										
Age of reference person:										
Under 35	5.95	5.34	83.8	84.1	21,792	23,429	[5].250	[5].167	[5].14	.09
35 to 64	7.35	6.57	91.5	88.1	28,587	32,820	[5].264	[5].166	[5].13	.08
65 and older	4.65	4.71	88.6	87.2	11,674	16,109	[5].255	[6].149	[5].15	.09
Income group:										
Low	4.58	4.58	81.8	81.6	6,719	7,253	[5].264	[5].166	[5].13	.08
Middle	6.23	5.58	89.2	87.4	18,983	18,728	[5].264	[5].166	[5].13	.08
High	8.10	6.97	93.8	90.3	41,562	47,794	[5].264	[5].166	[5].13	.08
Single person:										
Man	3.50	3.61	71.4	74.1	13,968	18,859	.142	.116	.11	.09
Woman	3.27	3.43	77.1	78.8	8,963	12,963	.155	.150	.12	.11
Race of reference person:										
Black	4.54	4.25	81.0	78.9	15,677	19,085	.040	–.052	.03	–.03
White or other	6.60	5.99	89.2	87.6	24,074	27,379	[5].264	[5].166	[5].13	.08
Fruits and vegetables										
Age of reference person:										
Under 35	7.11	6.28	76.7	79.9	22,076	23,653	[5].317	[4].367	[5].15	.17
35 to 64	9.17	7.89	87.8	88.6	28,885	33,052	[5].379	[5].353	[5].15	.14
65 and older	6.91	6.54	88.8	92.2	11,819	16,113	[5].467	[4].219	[5].19	[6].09
Income group:										
Low	6.13	5.76	78.0	82.3	6,731	7,214	[5].379	[5].353	[5].15	.14
Middle	7.89	6.56	84.4	86.2	19,036	18,761	[5].379	[5].353	[5].15	.14
High	9.91	8.71	89.7	91.0	41,940	47,961	[5].379	[5].353	[5].15	.14
Single person:										
Man	5.18	4.47	63.9	72.2	14,924	19,205	[4].301	[4].288	[4].18	.17
Woman	5.19	4.53	77.8	84.1	8,964	13,024	.215	[6].226	.11	.12
Race of reference person:										
Black	7.38	6.60	80.3	85.6	15,891	19,343	[5].326	.148	[5].13	.06
White or other	8.15	7.22	84.5	86.9	24,304	27,548	[5].379	[5].353	[5].16	.15
Fats and oils										
Age of reference person:										
Under 35	2.38	2.53	41.5	36.7	23,310	23,842	.007	.117	.01	.15
35 to 64	2.78	2.81	54.2	49.8	29,817	32,812	.026	[5].076	.03	.09
65 and older	2.14	2.40	50.3	49.0	12,218	16,266	–.056	.058	–.07	[6].07

Table 10. Continued—Income elasticity estimates and related information, Heckman second-stage results, complete reporters only, 1980 and 1992

Characteristic	Real weekly expenditures[1]		Percent reporting[2]		Real annual income		Parameter estimate $I = (P^{.25})$		Income elasticity[3]	
	1980	1992	1980	1992	1980	1992	1980	1992	1980	1992
Income group:										
Low	2.23	2.36	39.6	40.3	6,897	7,334	-.026	[5].076	.03	.08
Middle	2.51	2.62	50.5	46.2	19,229	18,807	026	[5].076	.03	.09
High	2.75	2.87	56.7	50.0	41,631	46,715	.026	[5].076	.03	.10
Single person:										
Man	1.59	1.95	27.2	27.7	13,784	19,244	.040	.067	.06	.11
Woman	1.74	1.89	34.7	34.3	9,001	12,310	.056	.027	.08	.04
Race of reference person:										
Black	2.49	8.05	41.9	41.9	15,777	19,190	–.016	.048	–.01	.03
White or other	2.55	2.66	49.8	46.2	21,017	27,767	.026	[5].076	.03	.09
Other food at home										
Age of reference person:										
Under 35	9.86	12.00	87.4	91.4	21,140	22,881	[5].456	[5].767	[5].13	[6].21
35 to 64	12.22	14.49	91.2	92.3	28,480	32,588	[5].356	[5].894	[5].09	[5].22
65 and older	7.96	9.59	84.9	90.4	11,717	16,160	.280	[5].772	.09	[4].24
Income group:										
Low	7.38	8.90	84.1	88.1	6,656	7,117	[5].356	[5].894	[5].10	[5].25
Middle	10.91	11.86	89.1	92.6	18,974	18,779	[5].356	[5].894	[5].09	[5].23
High	13.36	16.49	92.9	93.7	41,595	47,832	[5].356	[5].894	[5].09	[5].22
Single person:										
Man	6.00	7.16	79.3	83.9	13,953	18,264	[5].141	[5].630	.06	[6].27
Woman	5.45	7.06	81.2	87.2	8,911	12,748	[5].227	[5].733	.09	[5].30
Race of reference person:										
Black	8.31	9.86	83.9	87.0	15,536	19,485	.119	.064	.04	.02
White or other	10.93	13.05	89.3	92.1	23,877	27,074	[5].356	[5].894	[5].09	[5].24

[1] Mean for those who reported an expenditure for the specific food item.

[2] Percent of consumer units in each group reporting at least one food expenditure.

[3] Elasticity calculated using average of 1980 and 1992 real weekly expenditures and real incomes.

[4] Statistically significant at the 95-percent confidence level.

[5] Statistically significant at the 99-percent confidence level.

[6] Statistically significant at the 90-percent confidence level.

NOTE: For 1980, statistically significant elasticities are different from zero; for 1992, statistically significant elasticities are different from the corresponding 1980 elasticities.

exists between the estimated elasticities of families younger than 65 and families 65 and older for beef, pork, and other meats. The 1980 elasticity for families 65 and older was 0.28, compared with 0.17 for those younger than 35 and 0.14 for the 35- to 64-year-old group. Although no statistically significant change occurred over time, the oldest group still had the largest predicted elasticity, 0.12, compared with 0.06 for the middle group and 0.02 for the youngest group. And although there was some variation in elasticities for other food at home in 1980 (0.13 for the youngest group, 0.09 for the middle group, and an estimate not significantly different from zero for the oldest group), by 1992 all age groups had elasticities in the low 0.20 range, with figures statistically significantly different from their 1980 estimates.

Elasticities for fish and seafood also appear to differ by age. In 1980, only those in the 65-and-older group had a statistically significant elasticity (0.36). In 1992, the middle group had a statistically significant increase in elasticity, which rose to 0.33. Because the older group does not change significantly over time, one can say the middle age group "caught up" to the older one. The elasticity of the under 35 group was not statistically significant in either year.

Income. There is almost no variation in the elasticity of income by age group. Although the same parameter estimate is used to calculate elasticity regardless of income class (as described earlier), clear differences in real income and real expenditures can be seen for several food groups. So it appears that, because inverse income shares are used to calculate elasticities, conventional shares of income must be similar for the various income groups, a finding confirmed by table 3. Although some differences in shares by income in each year are observed, they are not generally large.

Even so, some trends are interesting. For example, regardless of income, families exhibited statistically significant increases in their purchases of cereal and bakery products, fish

and seafood, and other food at home. Although the 1980 elasticities for other food at home were statistically significantly different from zero, in 1992 they more than doubled for each food group. For fish and seafood, elasticities rose from a value not significantly different from zero to the low 0.30s.

Gender. Elasticities are slightly more complicated to analyze by gender. Except for other food at home, no elasticity appears to have changed over time for either single men or single women. But to interpret the results this way is slightly misleading. Actually, in several cases (cereal and bakery products, poultry, fish and seafood, and fruits and vegetables), the 1992 parameter estimate was statistically significantly different from zero for at least one gender, whereas the 1980 parameter estimate was not statistically significant for that gender. So why does it appear that there was no statistically significant change? It has to do with the question the statistical tests are asked to answer. For example, table 10 shows that, for both single men and women, the estimated elasticity for cereal and bakery products was 0.05 in 1980 and 0.22 in 1992. The 1980 parameter estimate was not statistically significantly different from zero. Although the 1992 parameter estimate *was* statistically significantly different from *zero*, it was *not* statistically significantly different from *0.05*. Thus, there is no indicator of statistical significance associated with the 1992 elasticity. Given that many elasticities were at least significantly different from zero in 1992, but were not in 1980, the analysis proceeds assuming that a difference from zero implies a change in elasticity.

Single men and women had very similar elasticities for cereal and bakery products, poultry,[78] and other food at home regardless of the survey year. However, single men appear to have had a higher elasticity for fruits and vegetables than single women did regardless of the year, and also for fish and seafood in 1992. Neither group had a statistically significant elasticity for beef, pork, and other meats; eggs; dairy products; or fats and oils, regardless of the year.

Race. Expenditures by race are subject to the same caveat as those for singles: occasionally, an elasticity was statistically significantly different from zero in 1992, whereas it was not in 1980, but the difference in the estimated elasticities for each year is not itself statistically significant. Even bearing this in mind, however, there are only two expenditures for which black families showed an income elasticity that was both positive and statistically significantly different from zero: fish and seafood (0.23 in 1992) and fruits and vegetables (0.13 in 1980). However, neither of these figures represents a statistically significant change in elasticity over time.

Still, for white and other families, many changes are evident. Elasticities increased for cereal and bakery products, fish and seafood, and other food at home and were significantly different from zero for beef, pork, and other meats (1980), poultry (1992), dairy products (1980 and 1992), fruits and vegetables (1980 and 1992), and fats and oils (1992). No statistically significant elasticities were calculated for eggs.

HAVE CONSUMER EXPENDITURES ON FOOD AT HOME changed to reflect current nutritional attitudes? To answer that question, this article has analyzed data from the Consumer Expenditure Survey in three different ways. The first compares how shares of the food budget were allocated in 1980 and 1992 for families with different demographic characteristics, including how price changes account for the observed differences. The second uses logistic regressions to see whether the frequency of purchasing specific food items has changed over time and how that frequency relates to demographic characteristics. The third utilizes results from the second stage of a Heckman two-stage regression analysis to estimate income elasticities for various food groups. Data from the new Diet and Health Knowledge Survey are used to analyze current nutritional attitudes by demographic group. These data are generally consistent with changing food expenditure patterns.

On the one hand, consumers are substituting poultry for meats with a higher fat content and are reducing their consumption of eggs. On the other hand, the consumption of fruits and vegetables has declined, although most demographic groups are purchasing fruits and vegetables more frequently. Both the consumption of, and the frequency of purchasing, fish and seafood have declined for most demographic groups. However, this finding is mitigated by the fact that income elasticities for fish and seafood have increased substantially, at least for families in the control group. Apparently, expenditures on fish and seafood increased more rapidly with income in 1992 than in 1980.

Among other interesting changes, single men consumed relatively more poultry in 1992 than in 1980, while single women consumed less; by contrast, single women were more likely to purchase fruits and vegetables than single men were, regardless of the year, although both groups purchased fruits and vegetables more frequently in 1992. Some generational differences were found. For example, families of all ages decreased their egg consumption from 1980 to 1992, but families 65 and older were most likely (and families under 35 least likely) to purchase eggs regardless of the year. Conversely, older families were most likely (and younger families least likely) to purchase fruits and vegetables. Substantial differences by income group were found through an examination of share indexes, with the high-income group exhibiting relatively more healthful changes. However, as regards the frequency of purchasing the various foods, gaps in probability are not generally large across income groups. The largest was for fish and seafood in 1980, with the high-income group about 5 percent more likely to purchase this item than the low-income group.

Race appears to have little relationship to food consumption as measured by share indexes, except for the meat group. Also, blacks are more likely than whites and others to purchase poultry or fish and seafood, and less likely to purchase dairy products or fats and oils, regardless of the year.

Some income elasticities exhibit notable changes over time. Income elasticities for several foods—cereal and bakery products, fish and seafood, and other food at home—have increased for many demographic groups. This rise indicates that a 1-percent increase in income yielded a larger percent increase in expenditures for these items in 1992 than it did in 1980. However, income elasticities for all other foods were generally stable across the 2 years that the survey was taken. For the most part, income elasticities for beef, pork, and other meats; dairy products; and fruits and vegetables were positive in 1980. However, elasticities for poultry, eggs, and fats and oils were not statistically significantly different from zero in 1980.

In general, the findings indicate that consumers are reacting to the ever-changing news about relationships of food to health, but that some demographic groups respond differently than others. Future work analyzing trends by demographic groups should provide further insight into changing food expenditure patterns, especially as more data on nutritional attitudes and awareness become available. □

Footnotes

[1] "Try These New Secrets: Live Longer and Love Every Day," *Prevention*, August 1993, p. 73.

[2] Judith Jones Putnam and Jane E. Allshouse, *Food Consumption, Prices, and Expenditures, 1970–92*, Statistical Bulletin No. 867 (U.S. Department of Agriculture, September 1993).

[3] These and the figures that follow are taken from Putnam and Allshouse, *Food Consumption*, table 1, "Major foods: Per capita consumption, 1970–92," p. 27.

[4] Unlike the per capita consumption of other foods described here, which was more or less steadily up or steadily down from 1980 through 1992, per capita dairy product consumption reached a low in 1981 (543.2 pounds), rose from 1982 (554.6 pounds) through 1987 (601.2 pounds), and then dropped sharply in 1988 (565.2 pounds), at which level it approximately remained until 1992 (564.6 pounds). Even so, per capita consumption in 1992 was 4 percent higher than in 1981.

[5] The consumption of both fresh fruits and fresh vegetables dropped from 1989 to 1991, probably due to sharp increases in prices after the 1988 drought. Per capita fresh fruit consumption increased strongly from 1991 (86.6 pounds) to 1992 (95.3 pounds), but that of fresh vegetables declined slightly over the same period, falling from 110.4 pounds to 109.3 pounds.

[6] Putnam and Allshouse, *Food Consumption*, p. 3.

[7] *Ibid.*

[8] "Fruit and Vegetable Consumption," *Family Economics Review*, vol. 6, no. 2, 1993, p. 24.

[9] Putnam and Allshouse, *Food Consumption*, p. 18.

[10] The Consumer Expenditure Diary Survey shows that in 1980, 88 percent of all families reported expenditures for food at home, compared with 73 percent for food away from home. In 1992, 90 percent reported expenditures for food at home, compared with 74 percent for food away from home.

[11] Putnam and Allshouse, *Food Consumption*, p. 3.

[12] In fact, the Continuing Survey of Food Intake for Individuals (CFSII) has superseded the NFCS to some degree, although it is not a perfect replacement for that survey. As the name implies, the CFSII collects information on what foods individuals actually consumed, but it does not collect household data (including food usage and demographic characteristics) that were formerly available in the NFCS. Furthermore, the CFSII is itself conducted only periodically. The first nationwide sample was collected in 1989–91, and a later sample was collected in 1994–96. The next scheduled surveys will take place starting in 1999.

[13] See, for example, Ching-Fan Chung, "A Cross-Section Demand Analysis of Spanish Provincial Food Consumption," *American Journal of Agricultural Economics*, August 1994, pp. 513–21; and Hwang-Jaw Lee, "An Analysis of a Food Demand System for the United States," ACCI [*American Council on Consumer Interests*] *Proceedings*, Toronto, 1992, pp. 271–78.

[14] Dale M. Heien and Cathy Roheim Wessells, "The Demand for Dairy Products: Structure, Prediction, and Decomposition," *American Journal of Agricultural Economics*, May 1988, pp. 219–28.

[15] Chung, "Cross-Section Demand Analysis"; Lee, "Analysis of a Food Demand System"; and Marilyn E. Manser, "Elasticities of Demand for Food: An Analysis Using Non-Additive Utility Functions Allowing for Habit Formation," *Southern Economic Journal*, July 1976, pp. 879–91.

[16] Susan M. Krebs-Smith, Annetta Cook, Amy F. Subar, Linda Cleveland, and James Friday, "U.S. Adults' Fruit and Vegetable Intakes, 1989 to 1991: A Revised Baseline for the *Healthy People 2000* Objective," *American Journal of Public Health*, December, 1995, pp. 1623–29.

[17] The reference person is the first member mentioned by the respondent when asked to "Start with the name of the person or one of the persons who owns or rents the home." It is with respect to this person that the relationship of the other family members is determined.

[18] The income groups include complete income reporters only. To be classified as a complete income reporter, the family must have reported at least one major source of income (such as wages or salaries, self-employment income, or Social Security income) for at least one of its members, although even complete reporters may not provide a full accounting of income for all levels and sources.

[19] A consumer unit, which is the basic unit of comparison in the Consumer Expenditure Survey, is defined as a single person living alone or sharing a household with others, but who is financially independent; members of a household related by blood, marriage, adoption, or some other legal arrangement; or two or more persons living together who share responsibility for at least two of three major types of expenses—food, housing, and other expenses. For convenience, the terms "consumer unit" and "family" are used interchangeably throughout the article.

[20] Although an attempt is made to keep all participating families in the sample for both weeks, some families are available only for 1 week. Thus, dividing by 2 underestimates the number of unique families participating.

[21] *Nutritional Attitudes and Dietary Status of Main Meal Planners/Preparers, 1989–91*, Agricultural Research Service NFS Report No. 91-1 (U.S. Department of Agriculture, January 1996). See especially page 1, and abstract for dates survey was conducted.

[22] The main meal planner or preparer is the person "most responsible for planning or preparing the household's meals." *(Ibid.*, p. 201.)

[23] *Ibid.*, p. 1.

[24] The second DHKS covers the period 1994–96.

[25] See technical note for formula.

[26] The CPI-U, which measures price changes in urban areas, is used. Although the Consumer Expenditure Survey data include both urban and rural consumers, most families (86 percent) in the 1980 and 1992 Diary surveys live in urban areas.

[27] Maureen Boyle Gray, "Consumer spending on durables and services in

the 1980's," *Monthly Labor Review*, May 1992, pp. 18–26; see especially p. 20.

[28] Although results from the 1980 and 1992 Diary surveys show that the average number of earners per consumer unit is 1.4 in both years, there has been a shift in the distribution of earners. Looking at single persons only, one finds that about 63 percent are earners in each year. But examining consumer units with at least two members, one readily sees that single-earner consumer units drop from 30 percent to 25 percent of these families, and two-earner consumer units increase from 44 percent to 49 percent of such families.

[29] Eva Jacobs, Stephanie Shipp, and Gregory Brown, "Families of working wives spending more on services and nondurables," *Monthly Labor Review*, February 1989, pp. 15–23; see p. 16.

[30] Putnam and Allshouse, *Food Consumption*, p. 16.

[31] *Ibid.*, p. 37. Table 10 shows that per capita egg consumption declined at a fairly steady rate from 1980 (271 eggs) to 1987 (254 eggs), at which point it fell sharply until 1990 to a level (233 eggs) at which it stabilized.

[32] Lee, "Analysis of a Food Demand System." Lee finds that poultry and seafood are substitutes (p. 275), with a cross-price elasticity of 0.36 (p. 278). In other words, for every 1-percent increase in the price of seafood, expenditures on poultry rise 0.36 percent.

[33] The BLS Division of Consumer Expenditure Surveys routinely compares results of the Diary survey with those of other surveys. Ratios of 1991 Consumer Expenditure Survey data to data from other sources are published in *Consumer Expenditure Survey, 1990–91*, Bulletin 2425 (U.S. Department of Labor, 1993), p. 11. Ratios also are found in internal reports, including Maureen Gray, *Ratios of Consumer Expenditure Diary survey to alternative sources, 1989–92*, 1994, table completed January 4. The Consumer Expenditure Survey data for fish and seafood are divided by the appropriate ratio in the table for conversion into values found by the other sources described. These values are then divided by the CPI for fish and seafood in each year, converting the values into real dollars for 1990, 1991, and 1992. The change from 1990 to 1992 can then be calculated for each source. For more information on the other sources, see Raymond Gieseman, "The Consumer Expenditure Survey: quality control by comparative analysis," *Monthly Labor Review*, March 1987, pp. 8–14.

[34] Steven M. Lutz, David M. Smallwood, James Blaylock, and Mary Y. Hama, *Changes in Food Consumption and Expenditures in American Households During the 1980's*, Statistical Bulletin No. 849 (U.S. Department of Agriculture, December 1992), table 2, "Household size: Average annual food use (per 21-meal equivalent person)," p. 20.

[35] See page 21 of the survey.

[36] To classify families by income group, complete income reporters are sorted by their total reported income and numbered consecutively, with the lowest income reported receiving a value of 1. The values are then all divided by the value associated with the family with the highest income, so that the family with the lowest income has a rank close to 0 and the rank of the family with the highest income is exactly 1. Families whose rank is less than one-third are counted in the lowest group. Those whose value is between one-third and two-thirds are placed in the middle group. The remaining families are placed in the highest group.

[37] In 1980, about 27 percent of low-income families had a reference person with at least some college education, compared with 54 percent of high-income families. In 1992, approximately 30 percent of low-income families had a reference person with at least some college education, compared with 66 percent of high-income families. Differences in level of education are controlled for in the logistic regressions.

[38] See p. 24 of the survey.

[39] See p. 127 of the survey.

[40] See p. 21 of the survey.

[41] See p. 22 of the survey.

[42] See p. 125 of the survey.

[43] See p. 124 of the survey.

[44] See pp. 38–39 of the survey.

[45] See pp. 48–49 of the survey.

[46] See pp. 44–45 of the survey.

[47] See pp. 22–23 of the survey.

[48] Peter Kennedy, *A Guide to Econometrics*, 3rd ed. (Cambridge, MA, MIT Press, 1992), Chapter 15; see especially pp. 228–30, 241–42.

[49] In this article, children are defined as persons less than 18 years old. Hence, in considering the addition of an adult to the husband-wife family with one child, the interpretation is that the spouses have two offspring living at home, one who is at least age 18 and the other under age 18. Otherwise, it is necessary to include the parameter estimate for "other family" in the probability equation, which complicates the comparison. Furthermore, the percent change from adding one child older than age 18 can be compared with the percent change from adding one child under age 18 to see whether the age of the older child affects the probability of purchasing a particular item of food, thus adding more flexibility to the analysis without further complicating the model.

[50] According to Jean A. T. Pennington and Helen Nichols Church, *Food Values of Portions Commonly Used*, 14th ed. (New York, Harper & Row Publishers, Inc., 1985), a large boiled egg contains 274 milligrams of cholesterol (p. 52). This compares with 3½-ounce servings of canned oysters (230 milligrams; p. 68), lobster (200 milligrams; p. 67), and shrimp (150 milligrams; p. 70).

[51] *Nutritional Attitudes*, pp. 21–23.

[52] Although the decrease in the family's probability of purchasing cereal and bakery products over the period (0.3 percent) is statistically significant for this food group, it is not economically significant.

[53] *Nutritional Attitudes*, pp. 21–22.

[54] *Ibid.*, pp. 78–80.

[55] Although the parameter estimates for the older-than-65 and 1992 interaction terms are not statistically significant for any food group, the dummy variable for 1992 is statistically significant for all but two (poultry, and fats and oils) of the foods just mentioned. Therefore, one can conclude that the control group experienced a decrease in the probability of purchasing these foods in 1992 and those older than 65 had no significant difference in the probability of purchasing the foods in the 2 years the survey was conducted.

[56] *Nutritional Attitudes*, pp. 124–26.

[57] *Ibid.*, pp. 21–23.

[58] *Ibid.*, p. 25.

[59] *Ibid.*, pp. 38–43.

[60] *Ibid.*, pp. 32–33.

[61] *Ibid.*, pp. 44–45.

[62] *Ibid.*, pp. 21, 23.

[63] *Ibid.*, p. 124.

[64] *Ibid.*, p. 126.

[65] For those with some college, the decline also appears to be sharp (about 8 percentage points), although the parameter estimate just misses statistical significance at the 90-percent level.

[66] *Nutritional Attitudes*, pp. 21–22.

[67] *Ibid.*, p. 124.

[68] Although the CPI is sometimes used as a proxy for price levels (see, for example, Lee, "Analysis of a Food Demand System"), there is insufficient variation in price levels in the 2 years investigated in this study to warrant the attempt.

[69] James J. Heckman, "Sample Selection Bias as a Specification Error," *Econometrica*, January 1979, pp. 153–61.

[70] John F. McDonald and Robert A. Moffitt, "The Uses of Tobit Analysis," *Review of Economics and Statistics*, vol. 62, no. 2, 1980, pp. 318–21.

[71] G. E. P. Box and D. R. Cox, "An Analysis of Transformations," *Journal of the Royal Statistical Society*, Series B, 1964, pp. 211–43.

[72] *Ibid.*, p. 214.

[73] Stuart Scott and Daniel J. Rope, "Distributions and Transformations

for Family Expenditures," *1993 Proceedings of the Section on Social Statistics* (Alexandria, VA, American Statistical Association), pp. 741–46.

[74] Had incomplete reporters been included in the probit sample, the parameters from the logit and probit regressions would presumably predict identical probabilities (or extremely similar ones) for each demographic group.

[75] It may be of interest to note that the coefficient for the inverse of Mill's ratio is statistically significant only three times. The first is for cereal and bakery products in 1992; the coefficient (8.293) is significant at the 90-percent confidence level. The second is for fruits and vegetables; the 1980 coefficient (6.552) is statistically significant at the 90-percent confidence level, and the 1992 coefficient (–3.098) is not statistically significant, indicating that the 1980 estimate holds for both periods. The third time is for dairy products. As with fruits and vegetables, only the 1980 coefficient (10.292) is statistically significant, but this time at the 99-percent confidence level; the 1992 coefficient (–3.858) is not statistically significant.

[76] The regression model presented in the equation that follows is greatly simplified. Let a stand for all parameter estimates and independent variables not associated with income. Let I stand for the income of the group under study; b is the parameter estimate related to income for the group. Note that in the Heckman procedure, it is necessary to include the inverse of Mill's ratio and its coefficient when taking the derivative $\partial Y/\partial I$. However, recall that the first stage of the model which uses the Heckman procedure includes no continuous income variables—only categorical variables defining the income class (low, high, or incomplete reporter). Therefore, the inverse of Mill's ratio can be treated the same way as all the other variables included in a; that is, the partial derivative of the inverse of Mill's ratio equals zero. (For more on calculating this derivative, see Atanu Saha, Oral Capps, and Patrick J. Byrne, "Calculating marginal effects in dichotomous-continuous models," *Applied Economics Letters*, vol. 4, 1997, pp. 181–85.)

[77] In other words, if the parameter estimate for 1980 is statistically significant, it is interpreted in the usual way. If the parameter estimate for 1992 is statistically significant for a particular characteristic, then the effect of this characteristic in 1992 is different from the effect it had in 1980, and this difference is statistically significant. As explained later in the text, the two parameters can be added, and the resulting sum can be tested with an F-test. The purpose of the F-test is to determine whether there is a statistically significant relationship between the characteristic in question and a particular food expenditure in 1992. (Consider a case where a 1980 parameter is, say, 5.0, and the 1992 counterpart is –5.0. Each value may be statistically significant according to a t-test: the effect in 1980 is 5 points, whatever that means in this case, and in 1992 it is 5 points less than in 1980. Combining the two yields a parameter estimate of zero, suggesting that there is no statistically significant relationship between the characteristic and expenditures in 1992. The absence of such a relationship is confirmed with the F-test.)

[78] The change in elasticity for poultry for single men just barely fails the test for statistical significance at the 90-percent confidence level: the calculated F-test value is 2.69; the critical value is 2.71.

APPENDIX 1: Food groups and Consumer Price Index categories

The following is a detailed list of food items contained in each food group.

Cereal and bakery products:
- Cereal and cereal products
  - Flour; prepared flour mixes; ready-to-eat and cooked cereals; rice; pasta, cornmeal, and other cereal products.
- Bakery products
  - White bread; bread other than white; cookies; crackers; frozen and refrigerated bakery products; biscuits and rolls; cakes and cupcakes; bread and cracker products; sweet rolls, coffee cakes, and doughnuts; pies, tarts, and turnovers.

Meat, poultry, fish, and eggs:
- Beef
  - Ground beef; chuck roast; round roast; other roast; round steak; sirloin steak; other steak; other beef.
- Pork
  - Bacon; pork chops; ham, not canned; canned ham; sausage; other pork.
- Other meats
  - Frankfurters; bologna, liverwurst, and salami; other lunch meats; lamb and organ meats; mutton, goat, and game.
- Poultry
  - Fresh whole chicken; fresh and frozen chicken parts; other poultry, including whole frozen chicken.
- Fish and seafood
  - Canned fish and seafood; fresh and frozen shellfish; fresh and frozen finfish.
- Eggs

Dairy products:
- Fresh milk and cream
  - Whole milk; other milk and cream.
- Other dairy products
  - Butter; cheese; ice cream and related products; miscellaneous dairy products.

Fruits and vegetables:
- Fresh fruits
  - Apples; bananas; oranges; other fresh fruits.
- Fresh vegetables
  - Potatoes; lettuce; tomatoes; other fresh vegetables.
- Processed fruits
  - Frozen orange juice; other frozen fruits and juices; canned and dried fruits; fresh, canned, or bottled fruit juices.
- Processed vegetables
  - Frozen vegetables; canned beans; canned corn; other canned and dried vegetables and juices.

Other food at home:
- Sugar and other sweets
  - Candy and chewing gum; sugar; artificial sweeteners; jams, preserves, and other sweets.
- Fats and oils
  - Margarine; other fats, oils, and salad dressing; nondairy cream and imitation milk; peanut butter.
- Miscellaneous foods
  - Frozen meals; other frozen prepared foods; canned and packaged soups; potato chips and other snacks; nuts; salt, spices, and other seasonings; olives, pickles, and relishes; sauces and gravies; baking needs and miscellaneous products; salads and desserts; baby food; miscellaneous prepared foods.

Nonalcoholic beverages
Cola; other carbonated drinks; roasted coffee; instant and freeze-dried coffee; noncarbonated fruit-flavored drinks; tea; other nonalcoholic beverages.

The following data show the levels of the CPI for detailed expenditure items. These are used to obtain real expenditures for the income elasticity estimates presented in the text.

CPI category	*CPI deflator*	
	1980	*1992*
Cereal and bakery products:		
Flour and prepared flour mixes	0.917	1.326
Cereal	.763	1.754
Rice, pasta, and cornmeal	.909	1.283
White bread	.859	1.462
Other breads	.859	1.483
Fresh biscuits, rolls, and muffins	.841	1.445
Fresh cakes and cupcakes	.822	1.484
Cookies	.808	1.563
Crackers; bread and cracker products	.829	1.749
Fresh sweet rolls, coffee cakes, and doughnuts	.835	1.449
Frozen and refrigerated bakery products, pies, tarts, and turnovers	.820	1.491
Meats, poultry, fish, and eggs:		
Ground beef other than canned	1.046	1.189
Chuck roast	.998	1.371
Round roast	1.013	1.259
Round steak	.989	1.299
Sirloin steak	.962	1.324
Other beef and veal[1]	.932	1.461
Bacon	.735	1.046
Pork chops	.829	1.389
Ham[2]	.855	1.356
Other pork	.838	1.295
Pork sausage	.822	1.236
Frankfurters	.925	1.313
Bologna, liverwurst, and salami	.905	1.353
Other lunch meats	.903	1.269
Lamb and organ meats[3]	1.025	1.314
Fresh whole chicken[4]	.944	1.319
Fresh and frozen chicken parts	.917	1.344
Other poultry	.950	1.269
Canned fish and seafood	.937	1.187
Fresh and frozen fish and seafood[5]	.841	1.687
Eggs	.886	1.083
Dairy products:		
Fresh whole milk	0.935	1.264
Other fresh milk and cream	.923	1.278
Cheese	.887	1.355
Ice cream and related products	.864	1.309
Butter	.894	.924
Other dairy products	.875	1.384
Fruits and vegetables:		
Apples	.921	1.795
Bananas	.915	1.399
Oranges, including tangerines	.726	1.762
Other fresh fruits	.862	2.007
Potatoes	.810	1.415
Lettuce	.778	1.557
Tomatoes	.819	1.718
Other fresh vegetables	.778	1.616
Frozen fruit and fruit juices[6]	.793	1.327
Other fruit juices[7]	.822	1.411
Canned and dried fruits	.844	1.310
Frozen vegetables	.776	1.309
Cut corn, canned beans excluding lima beans[8]	.825	1.317
Other processed vegetables[9]	.865	1.269
Other food at home:		
Sugar and artificial sweeteners	1.073	1.204
Candy and chewing gum	.846	1.375
Other sweets[10]	.822	1.404
Margarine	.928	1.320
Other fats, oils, and salad dressing	.913	1.233
Nondairy substitutes and peanut butter[11]	.804	1.375
Carbonated drinks[12]	.866	1.149
Roasted coffee	1.169	1.087
Instant and freeze-dried coffee	1.065	1.146
Other noncarbonated drinks[13]	.859	1.313
Canned and packaged soup	.866	1.537
Frozen prepared food[14]	.857	1.375
Snacks[15]	.808	1.331
Seasonings, condiments, sauces, and spices[16]	.823	1.430
Seasonings, olives, pickles, and relish	.804	1.439
Other condiments[17]	.835	1.381
Miscellaneous prepared food, including baby food	.840	1.503
Other canned and packaged prepared foods[18]	.848	1.278
Income before taxes[19]	.824	1.403

Footnotes to appendix 1

[1] Used to deflate other roast; other steak; other beef.

[2] Used to deflate ham, not canned; canned ham.

[3] Also used to deflate mutton, goat, and game.

[4] Used to deflate fresh and frozen whole chicken.

[5] Used to deflate fresh and frozen shellfish; fresh and frozen finfish.

[6] Used to deflate frozen orange juice; other frozen fruits and juices.

[7] Used to deflate canned or bottled fruit juices.

[8] Used to deflate canned beans; canned corn.

[9] Used to deflate other canned and dried vegetables and juices.

[10] Used to deflate jams, preserves, and other sweets.

[11] Used to deflate nondairy cream and imitation milk; peanut butter.

[12] Used to deflate cola; other carbonated beverages.

[13] Used to deflate noncarbonated fruit-flavored drinks; tea; other nonalcoholic beverages.

[14] Used to deflate frozen meals; other frozen prepared foods.

[15] Used to deflate potato chips and other snacks; nuts.

[16] Used to deflate salt, spices, and other seasonings; sauces and gravies.

[17] Used to deflate baking needs and miscellaneous products.

[18] Used to deflate salads and desserts.

[19] Deflator is CPI for all items.

APPENDIX 2: The *t*-test

In comparing the means of two samples, a *t*-test is frequently used to see whether observed differences are statistically significant. For large samples, the formula for the standard *t*-test is

$$t = (M_1 - M_2)/SE_p,$$

where

M_1 is the mean of the first sample,
M_2 is the mean of the second sample, and
SE_p is the pooled standard error of the samples.

The pooled standard error is calculated by squaring the standard errors of the first and second samples, adding the squares together, and taking the square root of the summed squares. If the value of t is greater than 1.96, the difference is said to be statistically significant at the 95-percent confidence level.

However, the above equation is not appropriate for testing differences in shares, because, as defined in the text, shares are calculated by dividing an average by an average. For example, if the average family in, say, group 1 spends $2 on beef and $50 on total food at home, its share S_{b1} is 0.04. If the average family in group 2 spends $3 on beef and $25 on total food at home, its share S_{b2} is 0.12. Both the mean expenditure for beef and the mean expenditure for total food at home have their own associated standard errors, which most likely differ for groups 1 and 2. These facts must be taken into account before a *t*-test can be computed.

Fortunately, a formula is available for the comparison of shares. (See Geoffrey Paulin, "Consumer expenditures on travel, 1980–87," *Monthly Labor Review,* June 1990, p. 60.) This formula uses the relative standard error of the mean (RSE) for each element of the share (beef and total food), where the RSE is defined as the standard error of the expenditure, divided by the mean expenditure. (That is, SE_{b1}/M_{b1} equals RSE_{b1}, in which $b1$ indicates group 1's expenditures for beef.) To calculate the pooled standard error for use in the shares test, the following formula is employed:

$$(SE_{pb})^2 = S_{b1}^2[RSE_{b1}^2 + RSE_{f1}^2 - 2S_{b1}RSE_{b1}^2] + S_{b2}^2[RSE_{b2}^2 + RSE_{f2}^2 - 2S_{b2}^2RSE_{b2}^2].$$

Here, the subscripts 1, 2, and f indicate 1980, 1992, and total food at home, respectively. To test whether the change in a group of consumers' share of beef from 1980 to 1992 is statistically significant, the following formula is used:

$$t_b = (S_{b1} - S_{b2})/SE_{pb}.$$

Comparing PPI energy indexes to alternative data sources

The trend in measures constructed using alternative sources of price data for energy products tracks fairly well with changes in the Producer Price Index

Katherine A. Klemmer and Joseph L. Kelley

The Bureau of Labor Statistics produces a family of indexes, called Producer Price Indexes, that measure the average change in prices received by domestic producers for their output. These indexes, updated monthly, are published at numerous levels of product aggregation and in a variety of classification schemes. Periodically, BLS reviews its indexes by comparing them with alternative measures of price trends. This article presents the results of one such test, which focuses on the important and price-volatile group of energy commodities, as arrayed within a stage-of-processing system of price indexes.

Background

The stage-of-processing (SOP) system is one of the primary classification schemes used by BLS to develop Producer Price Indexes (PPIs). The SOP indexes are commodity-based measures that regroup commodities at the subproduct class,[1] according to the class of buyer and the amount of physical processing or assembling the products have undergone. There are three major, or aggregate, SOP categories of goods: finished, intermediate, and crude. Finished goods are defined as commodities that are ready for sale to the final user, which could be either an individual or a business firm. Examples include bread, gasoline, apparel, and passenger cars. Intermediate goods are materials, supplies, and components that have been partially processed but require further processing. Intermediate goods also consist of nondurable, physically complete goods purchased by business firms as inputs to their operations. Intermediate goods include flour, cotton yarn, steel mill products, and lumber. Crude materials are defined as unprocessed commodities entering the market for the first time, such as crude petroleum, natural gas to pipelines, gravel, sand, steel scrap, and coal.[2]

Movement in aggregate PPIs, including movement in the stage-of-processing indexes, is driven in large part by the price fluctuations for energy commodities. This is due to the large relative importance of energy product indexes in the aggregate PPIs, as indicated in the following tabulation:

Stage-of-processing category	*Relative importance*
Finished energy goods as a part of total finished goods	13.575
Intermediate energy goods as a part of total intermediate materials	13.132
Crude energy materials as a part of total crude materials	36.173

Historically, Crude, Intermediate, and Finished energy PPIs experience large month-to-month price fluctuations. (See chart 1.) For example, the PPI for Crude energy materials increased 11.1 percent in November 1996 and 19.3 percent the following month. One of the factors driving this increase was a rise in natural gas prices: the index for Natural gas increased 33.8 percent in November 1996 and 39.9 percent in December 1996 due to low inventory levels. With storage

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levels already low due to the previous year's severe winter, the early onset of winter weather in 1996 caused a further drawdown of natural gas inventories, creating concern over supply shortages. The Crude energy materials index subsequently showed large decreases of 17.9 percent in February 1997 and 21.3 percent in March 1997, as prices for natural gas declined from the previous year's high.

Another example of energy price volatility occurred in 1990, as the result of Iraq's invasion of Kuwait. This event caused sharp increases in crude and refined petroleum prices, in anticipation of oil shortages caused by the hostilities. In August 1990, the Crude energy materials index increased 25.1 percent and the Finished energy goods index rose 8.96 percent. The PPI for Crude petroleum increased 62.4 percent and the PPI for Gasoline was up 17.4 percent over the same month.

Given the volatility of the PPIs for energy commodities, BLS periodically reviews the indexes. Such reviews include checks on methodology, analysis of trends, and, recently, a rigorous comparison to movements in prices for energy commodities published by BLS and other statistical agencies.

In the sections that follow, the movements of several PPIs for energy products are compared with trends in other published measures for the period January 1995–December 1997. (See exhibit 1 for a list of the PPI series selected for study and the alternative data sources used.) Means and variance tests are used for statistical analysis. (See appendix.)

Statistical test methodology

Conducting statistical tests to compare two data sources has certain advantages and limitations. These tests do not indicate the accuracy of the data or how closely the data reflect actual market price movements. However, they can provide insight into the similarities or differences between the data being compared. Specifically, the tests can show the extent to which the data sources have similar movements, and the extent to which the variances of the data sources are comparable.

Two tests were used to compare the PPI data series being examined to similar data from alternative sources. The first was a means test, conducted to determine if these series have significantly different average month-to-month percentage changes. Second, a variance test was conducted to compare the monthly movements of the two data series. The methodology for these two tests is presented in the appendix.

Chart 1. Month-to-month percent changes in the Producer Price Indexes for Crude, Intermediate, and Finished energy goods, January 1990–March 1998

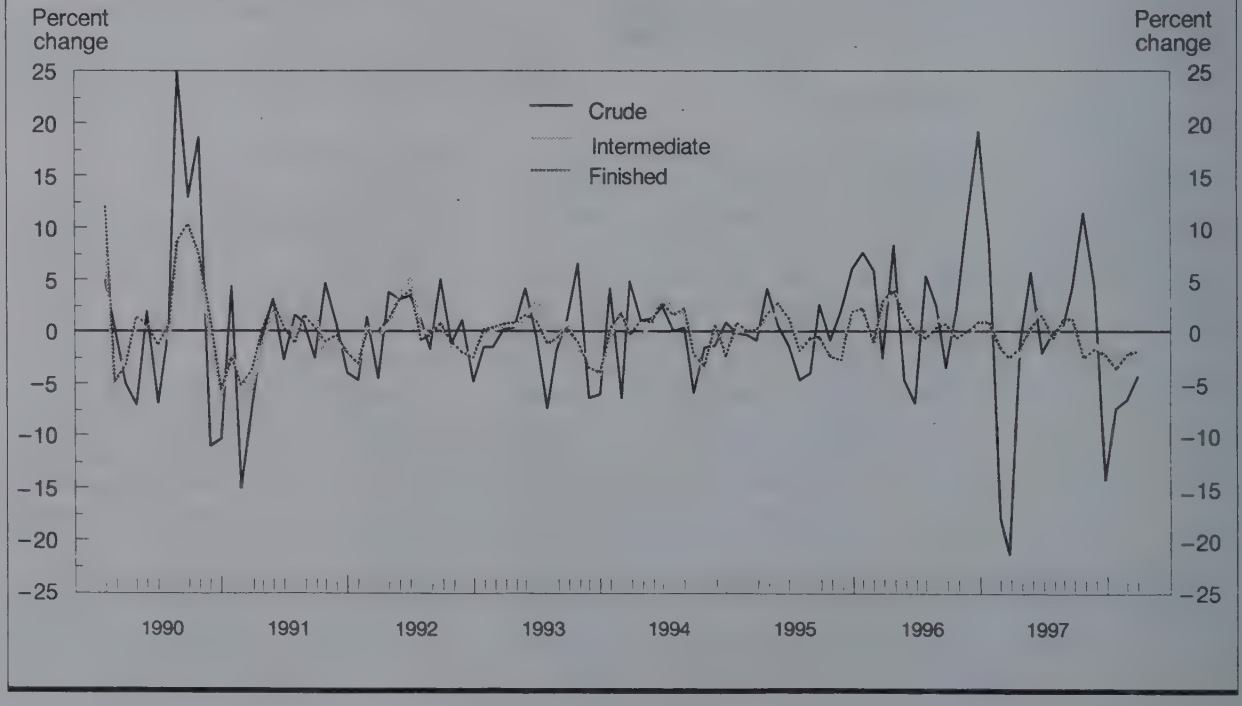


Exhibit 1. Selected Energy product indexes and corresponding alternative source data

Index number	Index	Alternative source data
PPI0531	Natural gas (Crude materials)	Energy Information Agency Natural gas data
PPI0561	Crude petroleum (Crude materials)	Energy Information Agency Crude petroleum data
PPI05730201	Fuel oil #2 (Finished goods)	Energy Information Agency Fuel oil #2 data
PPI0571	Gasoline (Finished goods)	Energy Information Agency Gasoline data
PPI0541	Residential electric power (Finished goods)	CPI for Residential Electric power
PPI0551	Residential natural gas (Finished goods)	CPI for Residential Natural gas

Performance measures

Most of the information used in calculating Producer Price Indexes is obtained through systematic sampling of the mining, manufacturing, and service sectors of the economy.[3] The energy industries covered by the PPI include crude and refined petroleum, natural gas at the wellhead, electric and natural gas utilities, and coal. Measures, or indexes, of price change classified by industry form the basis of the PPI program. These indexes reflect the price trends of a constant set of goods and services that represent the total output of an industry.[4] For example, the crude petroleum index includes both the Eastern and Western petroleum producing regions of the United States. The electric power and natural gas utilities indexes cover the residential, commercial, industrial, and "other" sectors.

In the PPI program, the preferred price to be collected is for an actual shipment that occurred as close as possible to the pricing date. The pricing date is the Tuesday of the week containing the 13th day of the month, and can range between the 9th and the 15th of the month. There are exceptions to the Tuesday pricing date for some products, however. A number of farm products are priced on a day of the week other than Tuesday. Prices for some refined petroleum products are commonly an average of prices during the first 10 working days of the month or the prices received by oil refineries on the tenth working day. Price indexes for liquefied petroleum gas, some industrial chemicals, and compact discs and audiotapes are based on data for the calendar month as a whole, and therefore lag 1 month behind other indexes. The November index for liquefied petroleum gas, for example, would reflect price changes that actually occurred in October.

Although most prices reported to BLS are the selling prices of selected producers that are referred to as free-on-board (f.o.b.) point of production, some prices are those quoted on organized commodity exchanges or at central markets. This practice is most often applied to farm products.[5] Order prices and "futures" prices are not included, because the PPI is intended to reflect the selling price for output being shipped in the reference month, not in some other period. Changes in transportation costs are reflected in industry price indexes only when the producing company delivers the product itself, rather than hiring a third-party shipper.[6]

For the purposes of the PPI program, a price is defined as the net revenue accruing to a specified producing establishment from a specified kind of buyer for a specified product shipped under specified transaction terms on a specified day of the month. Although the same product usually is priced month after month, it is necessary to provide a means for bridging over changes in detailed specifications so that only real price changes will be measured. Such an adjustment is especially important when an existing product is replaced by a new one. Even when companies report their selling prices based on altered transaction terms (such as price per 1,000 sold, instead of price per 100), routine steps are taken to ensure that only true price changes influence the index.

Because the Bureau of Labor Statistics publishes price indexes rather than the prices themselves, the BLS measures cannot be directly compared to published prices from other sources. To perform the analysis presented here, month-to-month percentage changes were calculated from the Producer Price Indexes. These changes were then compared with month-to-month percentage changes in the alternative data sources.

The alternative source data used include data published by the Energy Information Administration (EIA), and data from the Consumer Price Index (CPI), which is produced by the Bureau of Labor Statistics. The function of the EIA is to provide information to decisionmakers on energy policy issues. The primary users of the EIA data include the congress, the U.S. Government, the energy industry, academia, the media, and the public.[7] The major users of the CPI include the Federal Reserve Board, the congress, government, business executives, labor leaders, and the public.

Chart 2. Month-to-month percent changes in the Producer Price Index for Natural gas (PPI0531) and EIA Natural gas wellhead prices, February 1995–December 1997

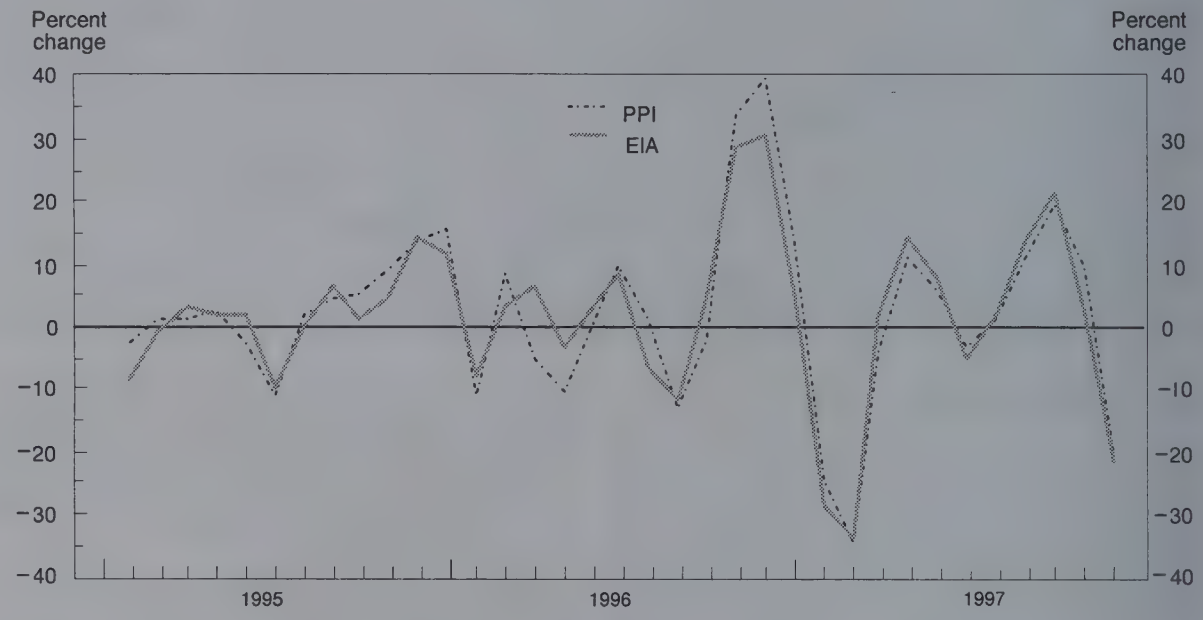
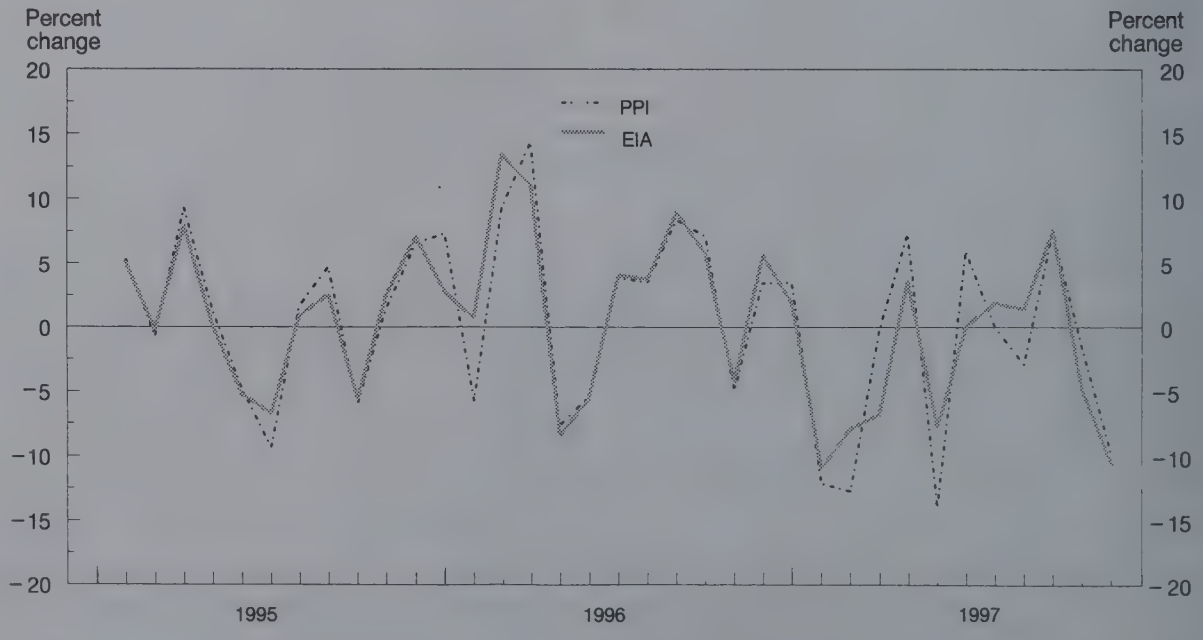


Chart 3. Month-to-month percent changes in the Producer Price Index for Crude Petroleum (PPI0561) and EIA Crude oil prices, February 1995–December 1997



The EIA and CPI data sources are described in detail below. An accompanying chart compares the month-to-month percentage changes in the PPI and in the alternative data source.

Comparisons with EIA data

The Energy Information Administration collects large amounts of energy product data. This information is valuable because of its variety, and includes data on prices, production, and sales, as well as detailed breakdowns.

The EIA publishes monthly average prices for natural gas, crude oil, fuel oil #2, and gasoline. While these data are useful for purposes of this analysis, it should be noted that the published prices represent full-month averages, as opposed to PPI data, which pertain to a specified pricing date within the month. Also, final data from the EIA are available after a 2- to 3-month lag, while Producer Price Indexes are published for the express purpose of month-to-month analysis of price change.

EIA Natural gas data. Final monthly average data on natural gas prices at the wellhead are obtained from Form EIA-627 and Form EIA-176, along with numerous other data related to natural gas production. Data on all aspects of monthly and annual natural gas production, including wellhead prices, are collected using Form EIA-627. The appropriate State agencies participate voluntarily in the survey. States complete the form by collecting information from natural gas producers. Form 176 is a mandatory form, and wellhead price data from this form are used here in cases for which EIA-627 wellhead price data are not available. Form 176 data are collected directly from field, well, or processing plant operators, synthetic natural gas plant operators, underground natural gas storage operators, investor and municipally owned natural gas distributors, and interstate and intrastate natural gas pipeline companies. Estimates for monthly natural gas prices are based on the change in production-weighted gas prices from Kansas, Mississippi, New Mexico, Oklahoma, and Texas. The gas production from these five States represents approximately 50 percent of total U.S. production, and its prices are readily available. Final revisions to the EIA monthly natural gas wellhead price data are made when the final annual data reported on the forms described above become available. This means that the current year's prices are estimated.[8] Chart 2 compares the month-to-month percentage changes in the PPI for Natural gas to changes in the EIA data.

EIA Crude oil data. The EIA publishes first-purchase prices for domestic crude oil on a monthly basis. These data, collected on Form EIA-182—Domestic Crude Oil First Purchase Report, are average wellhead price data from petroleum producers, and represent the average price at the wellhead at which domestic crude oil is purchased.[9] Chart 3 compares the month-to-month percentage changes in the PPI for Crude petroleum with the corresponding changes in the EIA data.

EIA Fuel oil #2 data. Each month, the EIA publishes data on prices of refined petroleum, as obtained from Form EIA-782A—Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report, and Form EIA-782B, Resellers'/Retailers' Monthly Petroleum Product Sales Report. This survey collects data on a monthly basis from respondents who either directly or indirectly control a refinery or gas plant facility.[10] Chart 4 compares the month-to-month percentage changes in the PPI for Fuel oil #2 to changes in the EIA data.

EIA Gasoline data. The EIA survey forms described for Fuel oil #2 are the same ones used to collect Gasoline data. Chart 5 compares the month-to-month percentage changes in the PPI for Gasoline to corresponding changes in the EIA data.

Comparisons with the CPI

For purposes of this analysis, PPI data also were compared with CPI data, primarily because of the quality of both data series. But, while both the PPI and CPI are measures of price change over time for a fixed set of goods and services, they differ in two critical areas: (1) the composition of the set of goods and services, and (2) the types of prices collected for the goods and services included.

The target set of goods and services included in the PPI is the entire marketed output of U.S. producers; thus, imports would be excluded. The set includes both goods and services purchased by other producers as inputs to their operations or as capital investment, and goods and services purchased by consumers, either directly from the service provider or indirectly from a retailer. In contrast, the target set of items included in the CPI is the set of goods and services purchased by urban U.S. households; this set includes imports. This difference in the target sets of goods means that, while the CPI program collects prices only for electricity and natural gas sales made to residential consumers, the PPI program also collects prices for sales to commercial and industrial consumers.

The other area of difference between the PPI and CPI is in the type of price collected. The price collected for an item included in the PPI is the revenue received by the producer. Sales and excise taxes are not included because they do not represent such revenue. The price collected for an item included in the CPI is the out-of-pocket expenditure by a consumer for the item. Sales and excise taxes are included in the collected price because they are necessary expenditures by the consumer for the item.

More significant differences in the CPI and PPI occur as the lower level indexes are aggregated into higher level indexes. This is because the CPI and the PPI have different intended objectives and uses. A primary use of the PPI is to deflate revenue streams in order to measure real growth in output. The objec-

Chart 4. Month-to-month percent changes in the Producer Price Index for Fuel oil #2 (PPI05730201) and EIA Fuel oil #2 prices, February 1995–December 1997

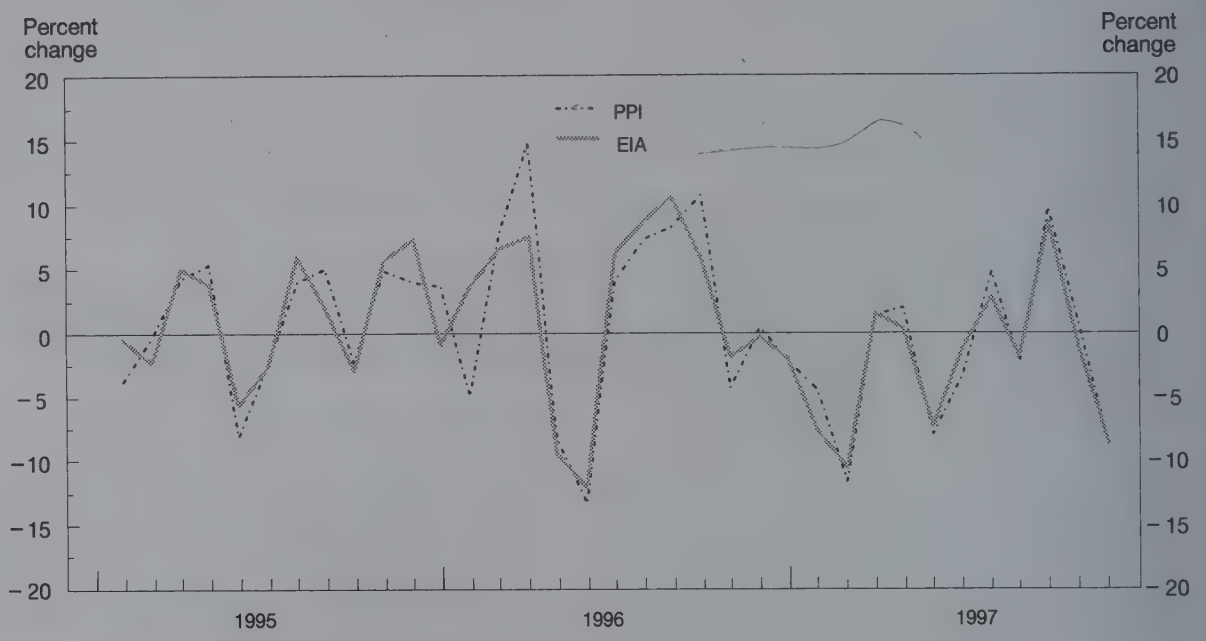
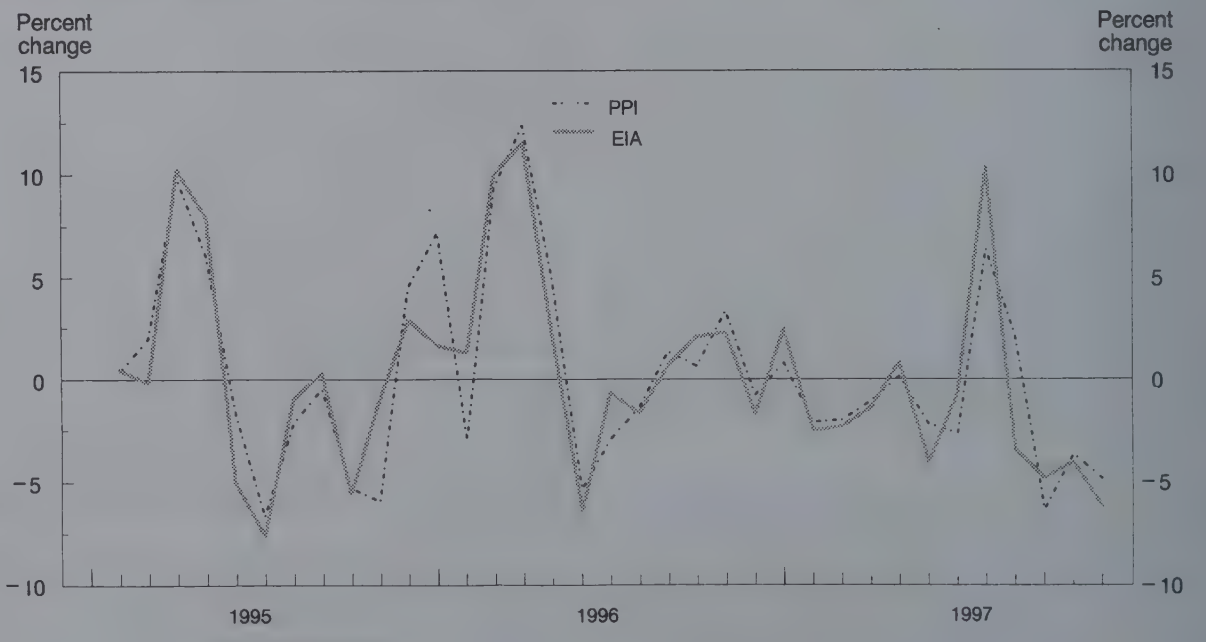


Chart 5. Month-to-month percent changes in the Producers Price Index for Gasoline (PPI0571) and EIA Gasoline prices, February 1995–December 1997



tive of the CPI program is to approximate a cost-of-living index conditioned on market prices—in other words, to measure the change in consumers' well being that results from changes in consumer prices. (One use of the CPI is to adjust income streams such as Social Security payments.) Because of the different uses of the PPI and CPI, each program utilizes a different weighting scheme. PPI weights currently are based on the value of shipments of products as reported by producers for the 1992 economic census. For the period through December 1997, CPI weights were based on expenditures reported by households for the years 1982–84. Because of the difference in the weights for the Electricity and Natural gas indexes in the two programs, price changes have differing degrees of impact on the higher level aggregate indexes in each program.

Aggregation of the indexes in the two programs also results in index series that are unique to each program. The CPI program calculates indexes for Residential electricity and for Natural gas for 32 metropolitan areas plus 12 region-city size classes (not all of which are published). The national-level indexes for electricity and for natural gas are aggregations of these 44 individual indexes. The PPIs for the same products do not approach this level of detail, being published only for nine census regions.

So, at the lowest level, the Electricity indexes in the two programs are relatively similar, but do demonstrate differences. However, as the indexes are combined into higher level aggregates for different objectives or uses, the measures become more dissimilar.

CPI Residential electric power data. The not seasonally adjusted CPI for electricity, U.S. City average for all urban consumers (series ID F01), was used as the alternative data source for comparison to the PPI for Residential electric power (PPI 0541). The CPI was chosen because of the comparability of the data that are collected for each index series, subject to the differences mentioned previously. Both the CPI and the PPI programs price residential utility bills based upon selected usage levels for a given month. In addition, the populations from which the items are chosen and the sampling methodologies used in both programs are virtually identical. Once a utility is selected from the population, analysts in each program use a process called "disaggregation" to select a unique item to be priced from month to month. In each case, prices are collected directly from the utilities. Chart 6 compares the month-to-month percentage changes in the PPI for Residential electric power with changes in the CPI for Electricity.

Table 1. Results of means tests of percent changes in prices for selected energy commodities

Commodity tested	*t*-value of means test	*t*-statistic	Decision on null hypothesis
Natural gas	0.1377	1.69	Fail to reject
Crude petroleum	−.0057	1.69	Fail to reject
Fuel oil #2	.0164	1.69	Fail to reject
Gasoline	.1013	1.69	Fail to reject
Residential electricity	.0382	1.69	Fail to reject
Residential natural gas	.0105	1.69	Fail to reject

Table 2. Results of variance tests of percent changes in prices for selected energy commodities

Commodity tested	*F*-value of variance test	*F*-statistic	Decision on null hypothesis
Natural gas	1.1656	1.57	Fail to reject
Crude petroleum	1.2862	1.57	Fail to reject
Fuel oil #2	1.2204	1.57	Fail to reject
Gasoline	.9619	1.57	Fail to reject
Residential electricity	1.5161	1.57	Fail to reject
Residential natural gas	1.0953	1.57	Fail to reject

CPI Residential natural gas data. The seasonally unadjusted CPI for Piped natural gas, U.S. City average for all urban consumers (series ID F02), was used as the alternative data source for comparison to the PPI measure for Residential natural gas (PPI 0551). The CPI for piped natural gas was chosen for the reasons stated in the section on Electric utility data above. Chart 7 compares the month-to-month percentage changes in the PPI for Residential natural gas to changes in the CPI for Piped natural gas.

Results of statistical tests

Tables 1 and 2 summarize the statistical results of the means and variance tests applied to the differences in changes between the price measures. There are 35 observations for each PPI data series and alternative data source. Unlagged PPI natural gas data were used for the period January 1995 through June 1996.

In table 1, the *t*-value calculated for each item is shown in the first data column. This value was compared to the *t*-statistic shown in the second data column. For all of the means tests, there was a failure to reject the null hypothesis that the means of the percentage changes for each pair of data series are the same.

Table 2 shows the calculated *F*-value and the corresponding *F*-statistic used to test the variances of the percentage changes of the data series. For all of the variance tests, there was a failure to reject the null hypothesis equating the variance for each pair of data series.

MONTH-TO-MONTH PERCENTAGE changes in the PPI energy series perform well when compared with corresponding changes in alternative data sources. There is no indication that the month-to-month percentage changes for the PPIs examined are significantly different from corresponding changes in alternative series. All of the data series examined similarly reflect any unusual price movements in the energy industries selected

Chart 6. Month-to-month percent changes in the Producer Price Index for Residential electric power (PPI0541) and the Consumer Price Index (CPI) for Electricity, February 1995–December 1997

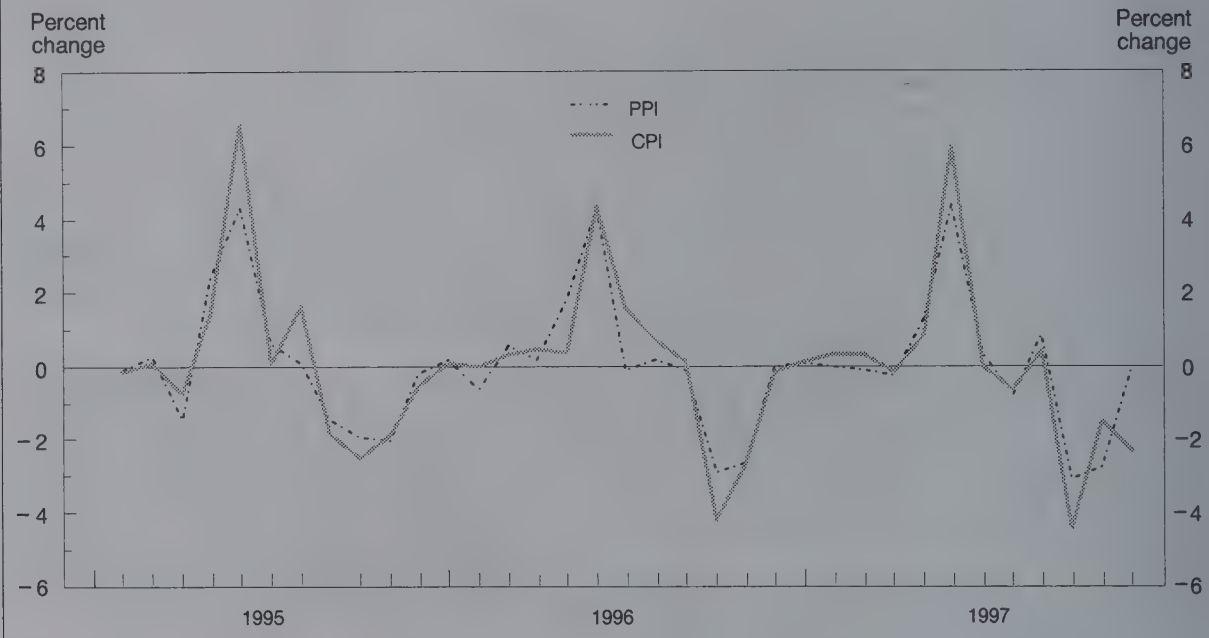
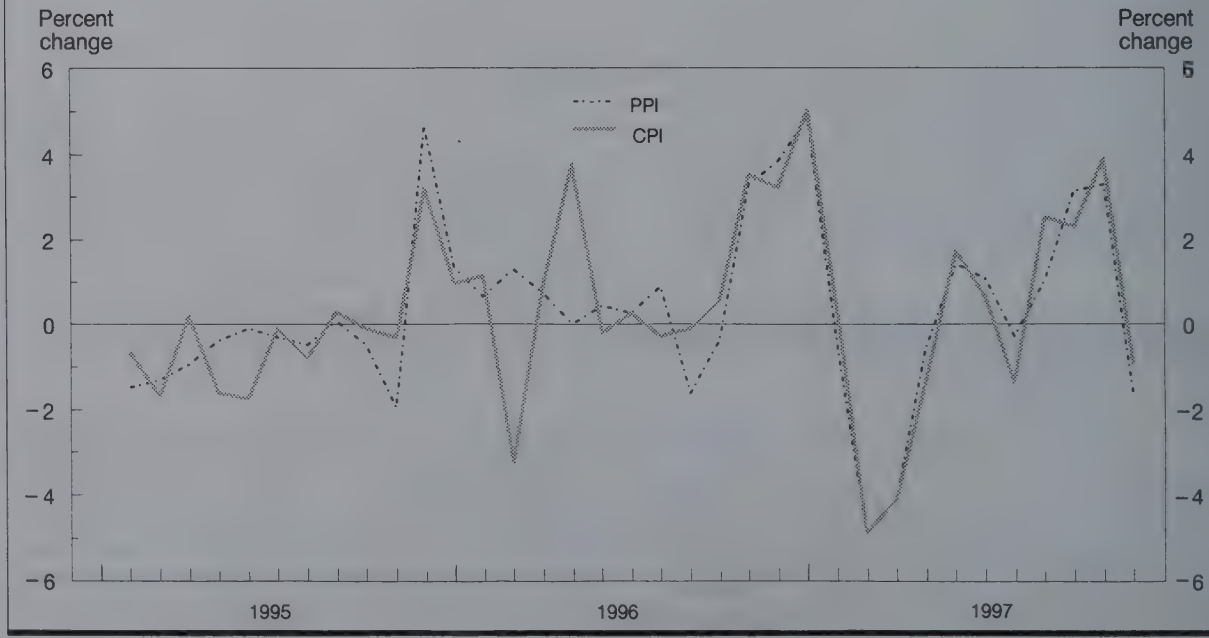


Chart 7. Month-to-month percent changes in the Producer Price Index for Residential natural gas (PPI0551) and the Consumer Price Index (CPI) for Piped natural gas. February 1995–December 1997



for study. The tests of the means and the variance tests used to compare the PPI series to the alternative source data failed in all cases to reject the null hypothesis that the trends of the series were essentially similar. □

Footnotes

[1] The subproduct class level is the six-digit level of the Producer Price Index Classification system unique to the PPI program. A complete listing of the commodity structure is avaiable on the Internet at: **ftp://146.142.4.23/pub/time.series/wp/wp.item**

[2] For further information on these indexes see *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, 1997), ch. 14.

[3] *BLS Handbook of Methods*, ch. 14.

[4] *Ibid.*

[5] *Ibid.*

[6] *Ibid.*

[7] See Energy Information Administration, *1998–2002 Strategic Plan*, section i, pp. 1–3, on the Internet at: **http://www.eia.doe.gov/faq.html**

[8] Energy Information Administration, *Directory of Energy Data Collection Forms* (Washington DC, U.S. Government Printing Office, 1996), pp. 5 and 8.

[9] *Ibid.*, p. 5.

[10] *Ibid.*, pp. 8–9.

APPENDIX: Test methodology

Means test

A test was conducted to compare the mean 1-month percent change of the measures based on alternative data sources to the mean 1-month percent change of the PPI data series. This test is used to indicate if the series have significantly different month-to-month percentage changes over the period examined.

The null hypothesis, $H_0 : \overline{X}_a = \overline{X}_b$, was tested against the alternative hypothesis, $H_1 : \overline{X}_a \neq \overline{X}_b$, where $\overline{X}_a$ and $\overline{X}_b$ represent the mean 1-month percentage change of the two samples being compared. Rejection of the null hypothesis occurs when the calculated *t*-test values fall outside the bounds of the two-tailed *t*-statistic. The *t*-test is based on a level of significance $\alpha = .10$.

The critical *t*-values are $(t_{\alpha/2})\,(n_a + n_b - 2)$, or $t_{1-(\alpha/2)}\,(n_a + n_b - 2)$.

The test statistic is $t_{obs} = \dfrac{(\overline{X}_a - \overline{X}_b)}{\sqrt{s_p^2\,[(1/n_a) + (1/n_b)]}}$,

where $s_p^2 = \dfrac{(n_a - 1)s_a^2 + (n_b - 1)s_b^2}{(n_a - 1) + (n_b - 1)}$.

H_0 is rejected when[1] $t_{obs} < t_{(\alpha/2)}\,(n_a + n_b - 2)$, or $t_{obs} > t_{1-(\alpha/2)}\,(n_a + n_b - 2)$.

Variance test

The following *F*-test statistic was used to test the homogeneity of the variances of the 1-month percentage changes for the PPI data series and for the corresponding measures based on alternative data sources:

$$F = s_L^2 \Big/ s_S^2 \quad .$$

Here s_L^2 represents the larger sample variance and s_S^2 represents the smaller sample variance. It is assumed that both data series have normally distributed sample populations and that the samples were randomly and independently selected from their respective populations.

The null hypothesis, H_0: $S_L^2 = S_S^2$, was tested against the alternative hypothesis, H_1: $S_L^2 \neq S_S^2$. Rejection of a null hypothesis occurs when the calculated *F*-test value exceeds a critical *F*-value based on the number of degrees of freedom and an established level of significance. The degrees of freedom are the number of observations minus 1. The level of significance used for this test was $\alpha = .10$. The critical *F*-value[2] was $F_{1-(\alpha/2)}\,(n_1 - 1, n_2 - 1)$.

Footnotes to the appendix

[1] Thomas H. Wonnacott and Ronald J. Wonnacott, *Introductory Statistics for Business and Economics* (New York, John Wiley & Sons, 1984), pp. 231–33.

[2] B.J. Winer, *Statistical Principles in Experimental Design* (New York, McGraw Hill Book Co., 1971), pp. 26–35.

Measuring time at work: are self-reports accurate?

A new measure of work time correlates well with the standard self-reported workweek method; however, a closer look reveals that reference periods—last week, versus last year—do have an impact on some workers in the distribution

Jerry A. Jacobs

Are Americans working more than they have in decades? Does the answer depend upon how one measures an individual's time at work? Since the publication of Juliet Schor's best-selling book, *The Overworked American*, questions regarding the amount of time workers devote to their jobs have received considerable attention.[1] Interest in the length of the workweek is related to important shifts in the demography of the labor force. In particular, the rise of dual earner families has left many individuals feeling pressed for time.[2] The "time famine" faced by working parents has generated much research and public discussion.[3]

John P. Robinson and his colleagues have carefully collected and analyzed time diary data from nationally representative samples of respondents since the 1960s. This research effort has produced many interesting and important findings regarding how American's use their time.[4] Based on their analyses of time diary data, Robinson and Ann Bostrom raised questions about the accuracy of the standard self-reported measure of working time. They suggest that respondents who claim to work long hours exaggerate the amount of time they spend on the job, compared with the time-diary measure. This finding challenges claims that have been made about trends in the time Americans spend on the job. For example, Philip L. Rones and others conclude that the proportion of Americans who work more than 50 hours per week has increased since 1970, based on analysis of data from the Current Population Survey (CPS).[5] If self-reported working time is exaggerated, then this conclusion becomes suspect. Claims of a general increase in working time would also be called into question if workers exaggerate their time on the job.[6]

Measures of working time are also important because they are instrumental in computing hourly wage rates. Due to the fact that many of the individuals reporting long hours on the job are workers with college degrees who earn high incomes, exaggeration of work hours among this group would increase estimates of the extent of inequality in the labor market.[7]

This article examines the accuracy of self-reported measures of working time raised by John Robinson and Ann Bostrom in four ways. First, it re-examines the issue of time inflation by offering a new interpretation of Robinson and Bostrom's results. Second, it investigates a new measure of the workweek, derived from departure and return times, and compares it to the results obtained with conventional self-reports. Third, it searches for factors that might produce bias and error in self-reports. And, fourth, this article considers the effect of differences across reference periods (last week versus last year) based on data from the CPS.

Exaggerated workweek?

The Current Population Survey, administered monthly, asks respondents: "What was _____ doing most of last week?" and then "How many

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hours did _____ work last week at all jobs?" Individuals' own estimates of their time spent on the job form the basis of this data series on working time.[8]

There are good reasons to be skeptical of individuals' self-reports of their time at work. As John Robinson and Geoffrey Godbey point out, "People think they know how many hours they work—that is, until they actually try to figure it out."[9] They suggest a number of reasons for miscalculations: respondents have to calculate their workweek in a few seconds; respondents might provide normatively desirable answers rather than precise information; and ambiguities in what constitutes work (commuting time, lunch breaks, work brought home) may lead to error in reporting. There are also good reasons to suspect that the exaggeration of working time has become more acute in recent years, as many workers in dual-earner families feel squeezed for time. In addition, if work is increasing in intensity, workers might mistakenly report this as an increase in the duration of work.

One approach to assessing the accuracy of data on working time is to compare individual self-reports with information from company records. Willard L. Rodgers and others report a moderately strong correlation ($r = 0.614$) between self-reports and company records regarding hours worked "last week."[10] They find a higher association when company and self-reports of annual hours are compared ($r = 0.719$). They also find no evidence that workers exaggerate their working time. Their results offer a basis for confidence in the standard self-reports of working time, at least for cross-sectional analyses. However, their sample of workers in one manufacturing company—most of whom were full-time, unionized workers—might not apply to the labor force as a whole.

Robinson and his colleagues take time diaries to be the gold standard of time measurement, and find other estimates of time use wanting.[11] To compare the two approaches using the same sample, Robinson and others ask a group of respondents to fill out time diaries as well as the standard self-reported question regarding time on the job. They find that respondents who report working long hours (50 or more hours per week) tend to exaggerate the time they spend at work, at least compared with time-diary measures which the researchers believe are more accurate. They also find that the extent of this exaggeration increased between the 1960s and 1980s.

The discrepancy between self-reported and time-diary measures of working time may instead be a statistical artifact. Robinson and Bostrom report that individuals working few hours underreport their time on the job, while those working long hours exaggerate their working time. This could result from regression to the mean: if two measures are strongly related, but with significant measurement error, the pattern reported by Robinson and Bostrom will be observed simply as a function of the fact that the random errors at the top of the distribution will tend to deflate the highest scores, and random errors at the bottom of the distribution will tend to inflate the lowest scores. Evidence presented later suggests that workweeks are entirely consistent with this "regression to the mean" explanation. That will be the first theme of this analysis.

Robinson and his colleagues maintain that time-diary measures are an attractive alternative to the standard self-reported estimate of working time. Although there is much to be gleaned from time diaries, they represent an extremely data-intensive research strategy. Moreover, they do not readily provide answers to some important questions about the labor force. For example, with a standard daily diary, a researcher cannot assess the length of the workweek for a given individual or a married couple. Instead, one must add the weekdays and weekends of different individuals to create a synthetic workweek.[12] Thus, for many purposes, such as translating weekly earnings into hourly wage rates, a daily time diary will not suffice.

While time diaries provide more detailed data on time utilization than do standard self-reported questions, an even more detailed approach to time use is the Experience Sampling Method. For this survey, respondents are required to wear digital wristwatches that beep randomly for them to record their activity several times over a 1-week period.[13] Advocates maintain that this method avoids the recall problems of time diaries and thus provides more precise information about time use. To date, the Experience Sampling Method has been employed to measure adolescent students' use of, and evaluation of, their time.[14] It remains to be seen how appropriate this methodology will be for adults' use of time, including time on the job.

Departures and returns

It would be desirable to develop simple measures of working time that can serve as a check on the accuracy of self-reports, and, if necessary, as a substitute for them. Eliciting from respondents the time they typically leave their homes for work and the time they typically return home from work is one such possibility.[15]

Workers have good reason to remember the times at which they leave for and return from work. Some workers have to arrive at work by an appointed time, such as 9 AM. Many others listen to the radio or television while preparing to leave for work, and might note the current time mentioned by announcers or shown in the corner of the television screen. (Television shows organized into half-hour time blocks make it easy to estimate departure and return times to within 30-minute accuracy.) Workers commuting by train sometimes have to arrive at the station at a designated time to catch a particular train. As a cognitive task, then, it might be easier

for respondents to specify their departure and return times than it is to estimate the amount of time they spend on the job.

One could then use departure and return times to calculate the time respondents are away from home. Of course, this method does not exactly match the time workers spend on the job, because commuting time, lunch, and other breaks are included. Even though comparing departure and return times might overstate time on the job, we still should consider time away from home as an important yardstick of workers' job obligations, because it taps a respondent's availability for child care and other household responsibilities.[16] In some data sets, it might be possible to subtract commuting time and other break time from the total measure of time away from home in order to obtain a more direct measure of time at work. The second goal of this article, then, is to compare the self-reported workweek of respondents with a measure calculated from departure and return times.

Bias in self-reports?

Are there systematic differences between self-reported and calculated working time? Even if there were no overall tendency for self-reports to exaggerate working time, it is possible that some groups of workers tend to overstate their workweeks, while others tend to understate their working time. Such discrepancies could result from three broad types of causes: social psychological factors, job factors, and demographic factors. Some factors might increase the error in reports, while others might cause exaggeration of time on the job. The following discussion examines these possibilities with respect to both exaggeration and error (irrespective of the direction of the errors).

Social psychological. These factors might lead some individuals to exaggerate or otherwise misreport their working time. Those who feel rushed on their jobs, who work with great intensity, or who feel they frequently confront difficult deadlines might inflate their reported working hours, compared with individuals who do not perceive their jobs as being so stressful. Workers who feel torn between the competing demands of home and work may also exaggerate their reports of working time. Individuals who feel a great deal of stress in their lives, whether that stress derives from the job or other sources, may also tend to exaggerate the amount of time they spend on the job. In contrast, those who feel more balance between their work and family lives and those who report more satisfaction with their lives may be less likely to exaggerate their time on the job.

Nature of job. Some workers might inflate their time at work solely because of the nature of their jobs. For example, individuals with nonstandard or irregular schedules might make greater errors than do those with regular schedules. Those who have more flexibility to set their own schedules might be more likely to err, and also to exaggerate the time they spend at work. For example, the self-employed could be more likely to inflate their working time because they might feel more responsible for their businesses, even when they are not technically at work. By contrast, those who are unionized and who have specific overtime provisions in their contracts might be less likely to exaggerate their working hours because they have precise measures of their workweek. Also, those with long tenure in a job should be less likely to misreport their working time, especially if their schedules have been stable for a long period of time.

Demographic attributes. These factors also might lead to misreporting and bias. Workers with small children, for example, might tend to exaggerate their working time because they feel torn between job and family demands. Misreports may vary by age, educational level, race and ethnicity, and marital status, although predictions about the specific direction of these differences are not obvious. Nevertheless, errors in work time reports across these groups could generate bias in estimates of between-group earnings differences.

Reference period

A change in the reference period provides an even simpler alternative to the standard question on the workweek. The standard question asks respondents to indicate the number of hours they worked last week. In some surveys, including the March Current Population Survey, respondents are also asked how many hours they typically worked per week *last year*. The mean and the dispersion of working time might differ when different reference periods are employed. It could be that a longer reference period would reduce the tendency to report very long workweeks and thus would solve the problem of exaggeration quite simply and directly.

Data and methods

The 1992 National Survey of the Changing Workforce (Workforce Survey, for short) was designed to gather data on a wide range of work experiences.[17] The connections between work and family life were the focal point of many of the questions. This analysis includes 3,059 employed individuals from a sample of 3,381 respondents. The Workforce Survey asks respondents when they typically left for and returned from work, and asks a supplemental set of departure and return times for respondents with split shifts. Respondents also were asked questions about the duration of their commute to work as well as how many days per week they worked. A measure

of time on the job, including lunch and breaks, but excluding commuting time (and also excluding work at home), thus can be computed. We refer to this indicator as the "calculated workweek," in contrast to the self-reported workweek. Because the standard self-reported question was also included in the Workforce Survey, comparisons can be made between the two measures for the same respondents. We can see how well these measures correlate, and ascertain whether certain respondents exaggerated their working time. While the CPS data are preferable for point estimates of working time and for the analysis of time trends, the additional variables available in the Workforce Survey allow for useful analyses not possible with the CPS.

Although the data include multiple jobholders, this analysis focuses only on the time spent in respondents' main job because job-specific covariates are more systematically available for the principal job. Thus, self-reports on the number of hours per week spent by respondents in their main or primary job are culled and compared to the time away from home for this job.

The accuracy of recording hours in military time poses a problem for data quality. In some cases, interviewers did not accurately code the military time of respondents' reports of departure and return to work. For example, when respondents indicated they returned from work at 6 PM, the telephone interviewers sometimes entered "600 hours," which represents 6 AM, instead of entering "1800 hours," which is the way 6 PM is represented in military time. There were cases in which respondents left for work at 800 hours and returned from work at 600 hours, for a calculated workday of 22 hours. This would produce a workweek of 110 hours for a 5-day week. These errors tend to inflate the calculated working time and reduce the correlation between self-reported and calculated working time. Return times were changed by 1200 hours systematically when the discrepancy between the calculated and self-reported workweek exceeded 12 hours per day (and were not changed otherwise). This occurred in 161 cases or 5.2 percent of the sample. These cases typically involved a discrepancy of 60 hours per week between the calculated and self-reported workweek for respondents who worked 5 days per week.[18] The impact of these corrections on the results is illustrated later in the results section.

The Workforce Survey data include a wide range of variables that are potentially associated with discrepancies between reported and calculated workweeks. Twenty-two measures were culled for analysis and grouped into three sets of predictor variables: social psychological orientations, job attributes, and demographic measures. The social psychological measures were examined to determine whether respondents who felt especially busy or rushed would exaggerate their hours on the job relative to other respondents. Ten such measures were considered: job satisfaction, thought of quitting job in last 3 months, enough time to get job done, difficult deadlines, working at a high fraction of one's capacity, supervisor support, family spillover to job, success in balancing work and personal life, satisfaction with current life, and being nervous and stressed in the last 3 months. Seven job attributes also were examined to determine whether some types of jobs produced systematic bias in estimates of the workweek. These included: flexible hours, shift type, union membership, self-employment status, dual-job status, years with employer, and job tenure. Finally, five demographic variables were examined: age, marital status, the presence of children in the household, race and ethnicity, and educational credentials. The appendix lists the specific wording of these questions and the categories available for individuals' responses.

To compare self-reported time measures for different reference periods, this analysis examines data from the March 1997 CPS. In addition to the questions mentioned earlier regarding the previous week, the March Annual Demographic Supplement to the CPS also elicits responses to questions about employment in the previous year. Specifically, March CPS respondents were asked, "Did (name/you) work at a job or business at any time during 1996? "Did (name/you) do any temporary, part-time or seasonal work even for a few days during 1996?" "During 1996 in how many weeks did (name/you) work even for a few hours? Include paid vacation and sick leave as work." "In the (one week/weeks) that (name/you) worked, how many hours did (you/he/she) work (that week/usually work) per week?" We compare the reports about last week and last year to ascertain whether there are any differences in the responses depending on the reference period specified in the questions. In additional analyses (not presented here), it was determined that the differences reported in the results section are not due to the mobility of individuals between 1996 and 1997, but appear to reflect the differences in the reporting period.

Nonfarm wage and salary workers aged 18–64 who worked at least 1 week during 1996 and were employed during the survey week in March, 1997 were selected for this comparison. Note that this sample does not precisely correspond to the employed civilian labor force in March 1997, but it is appropriate for the purposes of comparing hours typically worked in 1996 with hours worked in the survey week in March 1997.

Results

Before correcting for the apparent errors in military time, a moderately strong correlation ($r = 0.61$) between calculated and self-reported working time was obtained. After these corrections were made, the correlation increased in strength ($r = 0.77$).

Table 1 presents the distribution of self-reported and calculated workweeks for the entire sample. The mean workweek is slightly longer with the calculated measure than with the self-reported indicator (45.0 versus 42.2). This difference reflects the fact that the calculated measure includes lunch and other breaks that are excluded (in principle) from self-reports.

Do respondents who work long hours exaggerate their time at work? The top panel of table 1 appears to supports this conclusion. Those who reported working 60 or more hours per week on average report working 2.6 hours per week more than the calculated hours (64.8, versus 62.2), while for the rest of the sample, the calculated workweek is longer than the self-reported workweek. However, the second panel of table 1, which displays self-reports arranged by the length of the calculated workweek, suggests the opposite conclusion. These results suggest that those with calculated workweeks of 40 hours or more *understate* the time they spend at work, while those with calculated workweeks of less than 40 hours tend to exaggerate their workweeks.

How can we reconcile the results of the top and bottom panels of table 1? Both were obtained at the same time from the same sample and are merely different representations of the same relationship. These apparently contradictory sets of findings reflect regression to the mean. Those with a self-reported working time of 60 hours per week or more have calculated work times that include some error. These are random errors, but they tend to be below the self-reports because the latter are near the ceiling of this variable. A mirror image of this pattern is observed at the bottom of the distribution. Calculated time exceeds the self-reported working time by the greatest amount for those with the lowest self-reports because random errors tend to inflate these calculated hours.

This pattern can most readily be seen in the third column of table 1, where a random error term is added to respondents' self-reported hours. The mean has been adjusted so that it matches that of the self-reports. The distribution of this variable is compared with the self-reported measure in the top panel of table 1 and compared to the calculated workweek in the bottom panel. The distribution of discrepancies that emerges with this constructed measure, including a random term, is the same as the other discrepancy results (that is, compare columns 4 and 5). Thus, what appears to be exaggeration may instead be merely a reflection of the statistical artifact of regression to the mean between two measures that are correlated with some error.

In self-reports, the apparent pattern of long, exaggerated working hours and short, underreported hours (claimed by Robinson and Bostrom) reflects this pattern of regression to the mean. It may nonetheless be the case that one variable is exaggerated relative to the other, in addition to the regression phenomena discussed here. To test this possibility, we compare the variances of the two variables. If self-reported hours has greater variance than calculated hours, this would indicate that the dispersion is greater and that this measure is exaggerated at the top (and perhaps deflated at the bottom) relative to the calculated measure. (It would not indicate

Table 1. Distribution of average hours by self-reported workweek versus calculated workweek methods, 1992

Average hours per week range	Self-reported method				
	Self-reported hours (mean)	Calculated hours (mean)	Self-reported plus random factor	Difference (self-reported hours – calculated hours)	Difference (self-reported hours – self-reported plus random factor)
Total (mean)	42.2	44.8	42.2	–2.6	0.5
0–19 hours	13.8	18.0	20.4	–4.2	–6.6
20–29 hours	23.1	24.9	27.0	–1.8	–3.9
30–39 hours	34.3	38.4	35.7	–4.1	–1.4
40–49 hours	41.9	45.3	41.7	–3.4	.2
50–59 hours	51.7	52.6	49.2	–.9	2.5
60 hours or more	64.8	62.2	60.0	2.6	4.8
	Calculated method				
	Calculated hours (mean)	Self-reported hours (mean)	Self-reported plus random factor	Difference (calculated hours – self-reported hours)	Difference (calculated hours – self-reported plus random factor)
0–19 hours	14.1	20.6	25.7	–6.5	–11.6
20–29 hours	25.1	27.0	30.5	–1.9	–5.4
30–39 hours	35.9	37.0	37.8	–1.1	–1.9
40–49 hours	44.6	42.1	42.0	2.5	2.6
50–59 hours	53.4	49.0	46.7	4.4	6.7
60 hours or more	69.8	58.5	54.9	11.3	14.9

Table 2. Regression analysis of psychological determinants which could be attributed to inflated self-reported workweeks, 1992

Variable	Men		Women	
	Zero-order regression	Multiple regression	Zero-order regression	Multiple regression
Intercept	...	[1]–0.16200	...	–0.1489
		(.0787)		(0772)
Job satisfaction	[1].0175	.0077	(.0098)	.0118
	(.0077)	(.0098)	(.0073)	(.0093)
Thought of quitting in last 3 months	–.0039	.0021	.0009	.0052
	(.0049)	(.0059)	(.0043)	(.0053)
Enough time to get job done	.0021	.0023	–.0078	–.0088
	(.0092)	(.0102)	(.0082)	(.0092)
Has difficult deadlines	–.0022	–.0035	.0069	.0078
	(.0083)	(.0092)	(.0084)	(.0094)
Works at high fraction of capacity	[1].0008	–.0059	.0066	–.0097
	(.0003)	(.0114)	(.0098)	(.0101)
Supervisor supports family friendly	–.0001	–.0005	.0111	–.0003
	(.0111)	(.0004)	(.0360)	(.0003)
Family spill over to job	–.0043	–.0202	–.0055	.0067
	(.0260)	(.0442)	(.0097)	(.0391)
Success in balancing work and personal life	–.0425	[1]–.0268	.0130	.0085
	(.0421)	(.0101)	(.0094)	(.0103)
Satisfaction with current life	–.0154	[1].0440	[1]0.0233	[1].0247
	(.0142)	(.0109)	(.0084)	(.0104)
Nervous and stressed in last 3 months	–.0111	.0041	–.0024	.0032
	(.0093)	(.0066)	(.0052)	(.0062)
R^2	...	.0130	...	.0025

[1]p< .05.
SOURCE: National Survey of the Changing Workforce, 1992.

which was closer to the true distribution of working time.) The test of dispersion, however, indicates that calculated time has greater dispersion than self-reported time ($F'=1.18$, $df=3035$, $p<.001$). Thus, the reports at the extremes are not artificially inflated for the self-reported workweek, at least compared with the calculated workweek.

Tables 2 through 4 explore whether the discrepancy between these two measures of working time is related to independent variables. On the one hand, if the error in self-reports is highest among specific groups, knowing this will allow us to correct hours (and wage) data accordingly. On the other hand, if self-reported workweeks exhibit random error, then mismeasurement of working time might not be as serious a problem. While the estimates of workweeks and wages (because working time is used to translate wage data into hourly wage measures) will be in error, these errors will be unrelated to major variables of interest.

Table 2 reports regression analyses of the Workforce Survey data which predict the difference in these measures from social psychological measures. These analyses are designed to determine whether individuals' orientations to their life or job tend to exaggerate their responses to questions regarding working time. The first column of results is derived from zero-order regression equations (that is, each variable was entered into an analysis by itself), and the second column reports the results of a multiple regression analysis. Equations were estimated separately for men and women.

There is little evidence that these measures of workers' orientation to their jobs or their life lead them to exaggerate their working time. For example, those who feel rushed at work (that is, those who report not having enough time to get their jobs done or are facing difficult deadlines) are no more likely to exaggerate their working time than are other respondents. Similarly, those who feel they are working at full capacity are no more likely to exaggerate than are those who say they are only working at a fraction of their capacity. In terms of work-family conflict, those who report relatively high levels of conflict between home and work are no more

likely to exaggerate their work time than are those without such conflicts. Individuals who feel that their lives are in balance offer reports on their working time that are similar to persons who feel that their lives are terribly out of balance. Among a range of measures considered (including job satisfaction; thoughts of quitting; satisfaction with current life; and overall stress levels), none consistently predicted the level of exaggeration for men or women.[19] Neither equation explains as much as 1 percent of the variance.

Table 3 repeats the same analysis as does table 2, but substitutes job attributes for social psychological measures as potential predictors of discrepancies between the self-reported and calculated workweeks. Here too, few predictors are statistically significant. For example, individuals with flexible hours or who set their own hours are no more likely to exaggerate their workweeks than are those with standard schedules. There is some evidence that different shift arrangements yield biased work estimates, but these results should not be over-interpreted. The survey did not ask respondents about departure and return times for each shift, and thus the discrepancies between these measures may well be due to the fact that incomplete information about workers' complex schedules produced mistakes in calculated work time. Union status and dual-job status also have no statistically significant effect.

There is some evidence that job tenure reduces reported work time for men, but this may be offset by the fact that years with one's employer tends to increase reported working time. These effects are quite small in magnitude, but warrant further scrutiny. Women who held multiple jobs exaggerated their hours on their primary jobs, but this effect does not appear for men.

Table 4 repeats this analysis for demographic measures. These are included in the analysis for substantive, rather than theoretical, reasons: if one demographic group tends to exaggerate working time relative to other groups, then the wage differentials across these groups might well be biased. Fortunately, few statistically significant differences are evident in table 4. Age, marital status, the presence of children in the household, and race and ethnicity have no consistent effects

Table 3. Regression analysis of job attribute determinants which could be attributed to inflated self-reported workweeks, 1992

Attribute	Men		Women	
	Zero-order regression	Multiple regression	Zero-order regression	Multiple regression
Intercept	...	[1]–0.0788 (.0162)	...	–0.0659 (.0155)
Flexible hours	.0030 (.0042)	.0059 (.0045)	.0075 (.0041)	.0041 (.0044)
Working shift arrangements:				
Day shift (reference group)	...	...	...	...
Night shift	[1].0803 (.0297)	[1].0945 (.0298)	–.0306 (.0315)	–.0298 (.0316)
Rotating shift	[1].0549 (.0264)	[1].0523 (.0262)	–.0361 (.0280)	–.0317 (.0282)
Split shift	–.0309 (.0896)	–.0168 (.0871)	[1]–.2375 (.0769)	[1]–.2209 (.0807)
Flexible shift	–.0078 (.0216)	.0171 (.0229)	[1].0566 (.0211)	[1].0483 (.0229)
Union member	.0003 (.0165)	–.0023 (.0171)	.0024 (.0175)	.0120 (.0180)
Self-employed	–.0291 (.0188)	–.0220 (.0226)	.0248 (.0214)	.0267 (.0252)
Multiple jobholder	.0316 (.0221)	.0384 (.0223)	[1].0555 (.0219)	[1].0544 (.0219)
Years with employer	–.0012 (.0009)	[1].0023 (.0011)	–.0005 (.0009)	–.0013 (.0013)
Tenure in job (in years)	.0005 (.0008)	[1]–.0028 (.0014)	.0001 (.0011)	.0008 (.0016)
R^2	...	.0099	...	.0112

[1] $p < .05$.
SOURCE: National Survey of the Changing Workforce, 1992.

Table 4. Regression analysis of demographic determinants which could be attributed to inflated self-reported workweeks, 1992

Variable	Men		Women	
	Zero-order regression	Multiple regression	Zero-order regression	Multiple regression
Intercept	...	[1]–0.0934	...	–0.0187
		(.0273)		(.0268)
Age (in years)	[1].0013	.0013	–.0001	0.0002
	(.0006)	(.0007)	(.0006)	(.0006)
Marital status:				
Single (reference group)	...	...	...	...
Married	.0086	.0026	0.0048	–.0188
	(.0125)	(.0201)	(.0122)	(.0182)
Remarried	.0262	.0191	–.0095	–.0295
	(.0177)	(.0257)	(.0183)	(.0235)
Cohabitating	–.0243	–.0062	–.0295	–.0535
	(.0270)	(.0302)	(.0320)	(.0341)
Divorced	.0021	.0075	–.0251	[1]–.0449
	(.0219)	(.0266)	(.0159)	(.0215)
Separated	–.0567	–.0413	–.0080	–.0248
	(.0561)	(.0581)	(.0320)	(.0351)
Presence of children in household:				
None (reference group)	–	–	–	–
Infants	.0092	.0220	.0035	.0120
	(.0192)	(.0222)	(.0206)	(.0227)
Toddlers	.0355	.0389	–.0336	–.0242
	(.0243)	(.0260)	(.0220)	(.0236)
Elementary school age	.0316	.0324	–.0040	.0080
	(.0205)	(.0220)	(.0173)	(.0184)
Teenage	–.0034	–.0093	.0098	.0180
	(.0249)	(.0261)	(.0210)	(.0217)
Race and ethnicity:				
Non-Hispanic whites (reference group)				
Blacks	.0024	.0101	.0018	–.0011
	(.0175)	(.0208)	(.0215)	(.0182)
Hispanics	–.0220	–.0028	–.0266	–.0297
	(.0219)	(.0227)	(.0206)	(.0213)
Education level:				
College graduate (and higher) (reference group)				
Some college	–.0136	–.0126	–.0127	–.0122
	(.0168)	(.0170)	(.0153)	(.0156)
High school graduate	[1]–.0365	[1]–.0360	–.0466	[1]–.0469
	(.0151)	(.0155)	(.0147)	(.0150)
Less than high school	[1]–.0738	[1]–.0799	–.0157	–.0181
	(.0226)	(.0235)	(.0249)	(.0258)
R^2	...	.0081	...	.0037

[1] $p < .05$.

SOURCE: National Survey of the Changing Workforce, 1993.

on reported working time.

Table 4 does show that individuals with less than a college education tend to underreport their workweeks. This pattern is evident for both men and women. If true, this finding suggests that the educational premium is even higher than what it is generally understood to be, because the modest wages of those with a high school education would need to be divided by a greater number of hours. However, more educated workers might be more likely to bring their work home, an aspect of work that is missed by the calculated workweeks exam-

ined here. Working at home among professionals may compensate for the apparent overreporting by more educated workers documented in table 4. More evidence is needed before concluding that there is systematic bias by educational level in self-reported workweeks.

Tests for interaction terms were conducted to determine if exaggeration emerges among those reporting the longest hours. In other words, when terms for 40 hours plus (and then 50 hours plus) were interacted with each of the predictor variables included in tables 2 through 4, few statistically significant results were obtained.[20]

The above analyses test for exaggeration rather than errors in reporting. In other words, while the results presented in tables 2 through 4 consider whether some groups tend to inflate their self-reported time on the job, it is also possible that some groups tend to have especially high rates of error in their self-reports, irrespective of direction. However, as was the case in the results presented in tables 2 through 4, an analysis of this question revealed random rather than systematic errors. Few variables were statistically significant, even fewer were consistent between men and women, and these explained a very small fraction of the variance. [21]

Reference periods: last week or last year

Table 5 compares self-reported workweeks based on March 1997 CPS data for two reference periods (last week versus last year), and reports them separately for men and women. The mean length of the workweek is similar for these two time periods. For men, the two means are statistically indistinguishable, despite the large sample. Women reported working slightly longer weeks last year, compared with last week, but the difference amounts to only four-tenths of 1 hour. However, the variance in the "last week" measure is higher than that observed in the "last year" measure. These differences are statically significant for both men and women. In short, the proportion of respondents who report working more than 50 hours per week is lower when the reference period is last year, compared with last week. The proportion reporting usually working part-time (less than 30 hours per week) is also lower for last year than last week. Thus, if exaggeration tends to occur among those at the high end of the hour's distribution, then reliance on hourly data referenced over a longer time might help to minimize the problem.[22] Just as one study finds that the correlation between firm and worker data is higher for annual than for weekly data, these results point to the advantage of soliciting information about labor market behavior averaged over the previous year, or at least over periods longer than the previous week.[23]

Table 5. Trends in hours usually worked last week, for male and female nonfarm wage and salary workers, 1970–90

Category	Mean hours, all jobs (standard deviation)	Percent working less than 30 hours per week	Percent working 50 or more hours per week
Men, 1997 (n=24,889):			
Hours worked last week	42.66	9.26	25.40
Standard deviation	(12.46)	...	...
Hours usually worked last year	42.60	5.78	22.97
Standard deviation	(10.05)	...	...
Women, 1997 (n=23,968):			
Hours worked last week	36.90	19.78	10.93
Standard deviation	(11.93)		
Hours usually worked last year	37.30	16.00	9.23
Standard deviation	(10.30)	...	...

Conclusions

There are four principal findings in this article. First, the data indicate that the discrepancy between time-diary and self-reported measures of working time reflects a "regression to the mean" in measures that are correlated with error. The results closely resemble the Robinson and Bostrom finding by adding a random component to the self-reported time measure and then comparing the two distributions.

Second, independent measures of working time largely corroborate the self-reported measures relied on by the standard surveys, such as the census and the CPS. A workweek calculated from departure-and-return-time, minus commuting time, is slightly longer than the self-reported workweek and correlates with self-reports quite strongly.

Third, the discrepancies between the calculated workweek and the self-reported workweek are not highly patterned. In other words, few predictor variables account for the gaps between self-reported and calculated working time. To the extent that self-reported measures are in error, the errors appear to be largely random in nature. This is reassuring because, for most statistical analyses, random error is less serious than is patterned error.

And, fourth, data on "hours usually worked last year" tend to have less dispersion than those that involve "hours worked last week." The reference period thus seems to influence the extent of reporting at the extremes. If the greater dispersion of working time in the "last week" measure is seen as a reflection of a tendency of respondents to exaggerate their work schedules, then changing the reference period might be the simplest solution to the problem. Researchers of working time who are interested in the behavior of workers at the extremes of the distribution can produce more conservative estimates by relying on data with an annual, rather than a weekly reference period.

The standard self-reported measure of working time is a reasonably reliable indicator of time use at least in the broad range in which most workers are employed. Time diary and other measures of time use are surely useful, but should be viewed as supplementing, rather than supplanting, standard measures of the workweek. The conceptual differences in time measures should be noted. Time diaries attempt to measure actual working time, rather than time spent at work. Both of these aspects of work are important to measure.

Nevertheless, standard self-reported measures of the workweek do not appear to exaggerate the workweek for individuals working long hours. Further research on all aspects of workweek measurements, including reference periods, the sequence of questions on surveys, the use of time diaries, time sampling with beepers, and other techniques, is recommended. □

Footnotes

[1] Thomas J. Kneisner, "Review Essay: The Overworked American?" *Journal of Human Resources*, vol. 28, no. 33, pp. 681–88; Barry Bluestone and Stephen Rose, "Overworked and Underemployed: Unraveling an Economic Enigma," *The American Prospect*, March-April 1997, pp. 58–69; and Jerry A. Jacobs, and Kathleen Gerson, "The Endless Day or the Flexible Office? Working Hours, Work-Family Conflict, and Gender Equity in the Modern Workplace." Report for the Alfred P. Sloan Foundation, 1997.

[2] Arlie R. Hochschild, *The Time Bind: When Work Becomes Home and Home Becomes Work* (New York, Metropolitan Books, 1997).

[3] Sylvia Ann Hewlett, and Cornell West, *The War Against Parents: What We Can Do for America's Beleaguered Moms and Dads* (New York, Houghton Mifflin, 1998); Rosalind C. Barnett, "Home-to-Work Spillover Revisited: A Study of Full-Time Employed Women in Dual-Earner Couples," *Journal of Marriage and the Family*, 1994, vol. 56, pp. 647–56; and Ellen Galinsky, James T. Bond, and Dana E. Friedman, *The Changing Workforce: Highlights of the National Study* (New York, Families and Work Institute, 1993).

[4] John P. Robinson, and Geoffrey Godbey, *Time for Life: The Surprising Ways Americans Use Their Time* (University Park, PA, Pennsylvania State University Press, 1997); and John P. Robinson and Ann Bostrom, "The overestimated workweek? What the time diary measures suggest," *Monthly Labor Review*, August 1994, pp. 11–23.

[5] Philip L. Rones, Randy E. Ilg, and Jennifer M. Gardner, "Trends in the hours of work since the mid-1970s," *Monthly Labor Review*, April 1997, pp. 3–14; and Jacobs, and Gerson, "The Endless Day?" The Current Population Survey is a monthly survey of more than 50,000 households conducted by the Bureau of the Census for the Bureau of Labor Statistics.

[6] Juliet Schor, *The Overworked American* (New York, Basic Books, 1991).

[7] Hourly wages are typically computed by dividing earnings by hours worked. If the true working time were less than reported working time, the hourly wage would be higher. The potential concentration of this effect among high earners would inflate estimates of inequality and the returns to education, and affect analyses of other behavior that is associated with wages. See Mary T. Coleman and John Pencavel, "Changes in Work Hours of Male Employees, 1940–1988," *Industrial and Labor Relations Review*, vol. 46, no. 2, 1993, pp. 262–83. Also see Mary T. Coleman and John Pencavel, "Trends in Market Work Behavior of Women Since 1940." *Industrial and Labor Relations Review*, vol. 46, no. 4, 1993, pp. 653–76.

[8] The Bureau of Labor Statistics collects another series of data based on employer reports (establishment data) regarding production workers, but this does not cover the entire labor force and it does not allow for an understanding of individuals who may hold more than one job. See *Employment and Earnings* (Bureau of Labor Statistics, January 1997) for a comparison of household and establishment data series.

[9] Robinson and Godbey, *Time for Life*, 1997.

[10] Willard L. Rodgers, Charles Brown, and Greg J. Duncan, "Errors in Survey Reports of Earnings, Hours Worked, and Hourly Wages," *Journal of the American Statistical Association*, vol. 88, no. 424, 1993, pp. 1208–18; and John Bound, Charles Brown, Greg. J. Duncan, and Willard L. Rodgers, "Evidence on the Validity of Cross-sectional and Longitudinal Labor Market Data." *Journal of Labor Economics*, vol. 12, no. 3, 1994, pp. 345–68.

[11] Robinson and Bostrom, "The overestimated workweek?"; and Robinson and Godbey, *Time for Life*. In the time-diary approach, respondents are asked to recall all of their activities during 24 hours of a day.

[12] A weekly diary might avoid this problem, but it is even more expensive to collect. Moreover, the accuracy of time-diary data over the period of a week has yet to be determined. It could be that respondents would tire of filling out diaries after a few days, and might become increasingly sloppy in their reporting and forgetful of the activities in which they engaged.

[13] Barbara Schneider, Mihaly Csikszentmikhalyi, and Shaunti Knauth, "Academic Challenge, Motivation and Self-Esteem: The Daily Experiences of High School Students," in Maureen T. Hallinan, ed., *Restructuring Schools: Promising Practices and Policies* (New York, Plenum, 1995), pp. 175–95.

[14] Mihaly Csikszentmikhalyi, K. Rathunde, and S. Whalen, *Talented Teenagers: The Roots of Success and Failure* (London, Cambridge University Press, 1993). In their book, the authors solve the problem of aggregating measures of particular moments into a weekly schedule by reporting the percentage of time spent in various activities, rather than the amount of time. The aggregation issue might well be more challenging for the estimation of adult work schedules.

[15] A more detailed measure would ask respondents to indicate the departure and return times for each day in the survey week or the previous week. This would avoid the potential problem of misreports about what is a "typical" day. However, the last section of this article uses the "typical day" as a reference period, which might average out responses and result in a more reliable measure.

[16] On the other hand, measuring time away from home misses time spent working at home.

[17] Galinsky and others, *The Changing Workforce*, 1993.

[18] In nearly three-fifths of the cases, the corrected calculation improved the match with self-reported hours by 60 hours per week (a 12-hour change per day over a 5-day workweek). Most of the other changes were also sizable: 83.8 percent of the corrections involved an improvement in fit of 48 hours per week or more.

[19] Greater life satisfaction is associated with greater exaggeration for women, but this effect is small, is not evident for men, and is not consistent with expectations. Job satisfaction and working to a high percentage of one's capacity are both associated with greater exaggeration for men, but neither effect persists in a multivariate analysis.

[20] Results are available from the author via e-mail: jjacobs@sas.upenn.edu.

[21] Results are available from the author via e-mail: jjacobs@sas.upenn.edu.

[22] It may be possible to ask respondents about the length of the typical workweek, in addition to the hours spent working last week. This type of question might have the same properties as the "last year" measure without the drawback of forcing people to think about their work situation a year ago.

[23] Rodgers and others, "Errors in survey reports," pp. 1208–18.

Appendix: Selected questions, National Survey of the Changing Workforce

1. SATISFACTION WITH PRESENT JOB

Overall, how satisfied are you with your present job?
Are you...

1 very satisfied,
2 somewhat satisfied,
3 somewhat dissatisfied, or
4 very dissatisfied?
–2 DON'T KNOW
–1 REFUSED

2. PAST 3 MONTHS: THOUGHT OF QUITTING

How often in the past three months have you thought about quitting your job?
Would you say quite often, often, sometimes, rarely, or never?

1 QUITE OFTEN
2 OFTEN
3 SOMETIMES
4 RARELY
5 NEVER
–2 DON'T KNOW
–1 REFUSED

3. ENOUGH TIME TO GET JOB DONE

I have enough time to get the job done.
PROBE: Do you strongly agree, agree, disagree, or strongly disagree?

1 STRONGLY AGREE
2 AGREE
3 DISAGREE
4 STRONGLY DISAGREE

4. HAS DIFFICULT DEADLINES

I have deadlines that are difficult to meet.
PROBE: Do you strongly agree, agree, disagree, or strongly disagree?

1 STRONGLY AGREE
2 AGREE
3 DISAGREE
4 STRONGLY DISAGREE
–4 NEITHER/NOR
–3 N/A
–2 DON'T KNOW
–1 REFUSED

5. WORK AT __% CAPACITY

Not all jobs require that people work to their full capacity.
On a scale from zero to 100 percent, to what extent are you working to your full capacity?

6. SUPERVISOR ACCOMMODATES FAMILY CARE

My supervisor accommodates me when I have family or personal business to take care of, for example, medical appointments, meeting with child's teacher, etc.
PROBE: Do you strongly agree, agree, disagree, or strongly disagree?

1 STRONGLY AGREE
2 AGREE
3 DISAGREE
4 STRONGLY DISAGREE
–4 NEITHER/NOR
–2 DON'T KNOW
–1 REFUSED

7. FAMSPILL: FAMILY TO JOB SPILLOVER

(This variable averages valid responses to fourteen items regarding family spillover to work if the respondent has at least nine valid responses to these items.)

8. RATE SUCCESS: BALANCE WORK AND PERSONAL

How successful do you feel at balancing your work and personal or family life?
Do you feel...

1 Very successful,
2 Somewhat successful,
3 Somewhat unsuccessful, or
4 Not successful at all?
–4 NEITHER/NOR
–2 DON'T KNOW
–1 REFUSED

9. SATISFACTION WITH CURRENT LIFE

All things considered, how do you feel about your life these days?

Would you say you feel very satisfied, somewhat satisfied, somewhat dissatisfied, or very dissatisfied?

1 VERY SATISFIED,
2 SOMEWHAT SATISFIED,
3 SOMEWHAT DISSATISFIED, OR
4 VERY DISSATISFIED
–4 NEITHER/NOR
–2 DON'T KNOW
–1 REFUSED

10. PAST 3 MTHS: NERVOUS AND STRESSED

During the past three months, how often have you felt nervous and stressed?
Would you say...

1 very often,
2 often,
3 sometimes,
4 rarely, or
5 never?
–2 DON'T KNOW
–1 REFUSED

11. CONTROL OF SCHEDULE

Overall, how much control would you say you have in scheduling your work hours: none, very little, some, a lot, or complete flexibility?

1 NONE
2 VERY LITTLE
3 SOME
4 A LOT
5 COMPLETE FLEXIBILITY
–2 DON'T KNOW
–1 REFUSED

12. USUAL SHIFT

Which of the following best describes the hours that you usually work at your main job?

1 a regular day time schedule,
2 a regular evening shift,
3 a regular night shift,
4 a rotating shift—one that changes periodically from days to evenings or nights,
5 a split shift—one consisting of two distinct periods each day,
6 a flexible or variable schedule with no set hours, or
0 something else? [specify]
–2 DON'T KNOW
–1 REFUSED

Job losers and unemployment duration

The duration of unemployment measures have remained high compared with the same measures during typical expansions, observes Robert G. Valletta in the Federal Reserve Bank of San Francisco's *Economic Review*. This, says Valletta, is consistent with the secular trend toward rising unemployment duration that many analysts have documented. His article then tracks the impact of changes in the structure of unemployment by reason toward permanent job loss and away from voluntary job search and labor force entry.

Valletta's steady-state estimates of expected duration of unemployment found that duration was strongly countercyclical across all the various reasons for unemployment. He also found an upward trend in expected duration that led to an increase of 17 percent in that measure between 1979 and 1998.

After establishing his estimate of the upward trend in duration, Valletta proceeds to decompose it among changes in reasons for unemployment and changes in duration for each specific reason. He finds that the increases in the incidence of permanent job loss and the duration of unemployment associated with it can account for the full change in the trend in duration. "The incidence and duration of unemployment for other reasons [than permanent job loss] made essentially no contribution to rising unemployment duration," he concludes.

Severance pay and job search

The most obvious impact of providing displaced workers with severance pay is the positive effect it has on their living standards. In this respect, it is similar to unemployment insurance and other safety net provisions. Yolanda K. Kodrzycki, writing in the November/December issue of *New England Economic Review*, asks if severance pay might also have an impact on job search that is also similar to that of unemployment insurance.

Kodrzycki first compares severance pay with unemployment benefits: severance pay plans do not cover as much of the employer universe, tend to vary more among firms, and often favor more highly paid workers. Then, using a database that combines data on displaced workers with information on severance plans that may have been in effect at their employers at the time of displacement, she looks at how severance pay affects job search intensity and the likelihood a displaced worker would enroll in training or education.

She found that severance recipients took longer to become re-employed and were somewhat more likely to enroll in remedial and basic education programs, but were unlikely to earn any more in their new jobs than were displaced workers who did not get severance pay. In general, she concludes that "the key to displaced workers' being able to find a new job with comparable pay is not searching longer, but having transferable skills."

Travel and the home-based worker

Home-based work, as Patricia L. Mokhtarian and Dennis K. Henderson remind us in the October 1998 issue of the *Journal of Transportation and Statistics*, is " a multifaceted phenomenon, encompassing full- and part-time home-based businesses as primary sources of income (whether on a fully self-employed or contract work basis); moonlighting at a home-based business (HBB) as a secondary source of income; working overtime on evenings and weekends, whose practitioners are sometimes referred to as supplementors or *work permeators*; and home-based telecommuting, in which a salaried employee works at home part or full time instead of commuting to a conventional workplace at the usual time."

The impact of home-based work on transportation patterns, they go on to find, is also multifaceted. When home-based business owners and home-based telecommuters are compared with non-home-based workers in the 1991 Caltrans Statewide Travel Survey, home business owners had the highest daily total trip rate and telecommuters had about the same trip rate as conventional workers. Telecommuters had the highest rate of shopping and social/recreational trips, although it was not significantly higher than the rate for home-based business workers. Telecommuters also used a different pattern of transportation mode than the other two groups: fewer drive-alone trips, more carpool trips, and almost no transit trips.

The time patterns of travel were very different across the groups. The traditional workers, as expected, exhibited the traditional dual-peaks pattern reflecting the morning and afternoon rush hours, while trips of home business operators peaked in the late morning and dropped throughout the afternoon. This suggested to Mokhtarian and Henderson that this group was "more successful at avoiding the afternoon peak (for whatever reason) than the other groups." There was no real peak for telecommuters: their trips were fairly uniformly spread across the 9 a.m. to 6 p.m. period. □

This department briefly summarizes those items we find to be at least interesting, if not essential, out of the tremendous amount of information that passes across our editors' desks.

We are interested in your feedback on this column. Please let us know what you have found most interesting and what essential reading we may have missed. Write to Executive Editor, *Monthly Labor Review*, Bureau of Labor Statistics, Washington, DC 20212, or e-mail: mlr@bls.gov.

Employment relations

Changes at Work. By Peter Capelli and others. New York, Oxford University Press, 1997, 276 pp. $27.50.

The National Planning Association's Committee on New American Realities, a group of business and labor leaders, sponsored this volume in an effort to provoke a debate about how the employment relationship is changing.

Peter Capelli and his co-authors begin by describing what they call the "traditional" system of employment in the large U.S. corporations. During cyclical downturns, these corporations laid off production workers, beginning with the least senior, but they often provided managers with jobs for life. Career ladders and rewards for seniority buffered workers from sudden changes in the market's valuation of their labor and provided incentives for the development of firm-specific skills. The theme of *Change at Work* is that, pressured by competitors, investors, government regulators, and fickle consumers, corporations are discarding career ladders and seniority-based compensation and exposing their workers to the risks and rewards of external markets.

The first chapter claims that markets have changed in a way that makes it imperative that large corporations become "flexible," meaning that they are able to produce a wider range of products with shorter product cycles. This implies that fixed investments, including investments in firm-specific knowledge, become obsolete sooner, and that companies may need to have certain skills before they can develop them internally. Katharine Abraham's contribution to *New Developments in the Labor Market*, edited by Abraham and Robert McKersie, also explored the spread of market-mediated employment relationships and considered a smaller set of possible explanations. For example, both discussions point to labor legislation as providing employers with incentives to lease employees from personnel supply agencies. Capelli and chapter coauthor Michael Useem consider additional factors, such as the concern of institutional owners with rising stock prices, which have triggered corporate restructuring and changed human resource practices.

Two chapters discuss the effects on employees. Harry Katz's chapter focuses on downsizing and employment insecurity. He uses data from the American Management Association to show that professionals and managers accounted for a much larger share of the eliminated jobs in 1993–94 than they had in 1990–91. He also cites an analysis of data from the Current Population Survey which found that during the 1980s, job displacement rates rose for older and more educated workers, indicating that they enjoyed less job security. In a later chapter with a broader sweep, Capelli attempts to link a variety of labor market phenomena to the restructuring of the employment relationship. Some of these arguments are more persuasive than others. The change from defined-benefit pensions to defined-contribution plans, for example, is consistent with the thesis that large corporations are shifting the burden of uncertain returns to their employees. On the other hand, his claim that there has been an upward trend in the unemployment rate through 1994, when his data end, leaves the impression that he is trying to explain too many things, some of which have little connection with the spread of market-mediated employment relationships.

Paul Osterman's chapter on work reorganization and David Knoke's chapter on training show that larger employers are more likely to experiment with work organization and to provide formal, skills-enhancing training, while small employers are unlikely to innovate and to provide formal training. These chapters treat many of the issues covered by Eileen Applebaum and Rosemary Batt in *The New American Workplace*. Osterman as well as Applebaum and Batt find that no one set of workplace changes is dominating among larger employers, although work teams have become more widespread. Citing the Bureau of Labor Statistics 1993 Survey of Employer-Provided Training, Knoke points out that a significant reason for not training is that employers can hire the skills they need in the external labor market. The following chapter on skills mismatch finds that the problem is most evident with young workers who do not graduate from college. They have high unemployment rates, and when they work, they hold low-paying jobs that seldom afford the opportunity to learn new skills.

In the conclusion, Capelli asks whether restructuring will continue. The pressures on corporations to achieve flexibility will not diminish. On the other hand, he contends that teamwork requires skills and job security, while the new market-oriented relationship dispenses with job security and does not address the problem of developing the skills of the less educated.

The conclusion is not entirely satisfactory, but this is because Capelli and his co-authors have tackled a large and difficult topic. In short, *Change at Work* does not provide a definitive analysis of the changing employment relationship, but it certainly raises timely questions.

—Martin Kohli
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History of labor's war

Labor's Great War: The Struggle for Industrial Democracy and the Origins of Modern American Labor Relations, 1912–21. By Jospeh A. McCartin. Chapel Hill, University of North Carolina Press, 1997, 303 pp., bibliography. $18.95, paper.

McCartin's book focuses on the American labor movement from a time of limited size and power prior to World War I to rapid gains in wages, union rights, and membership during the War to an erosion of many of these victories following the 1918 armistice. An integral theme of the book is the idea of Industrial Democracy, a term that was almost universally embraced, but subject to different interpretations: collective bargaining to AFL members, owning the means of production to more radical unionists, and company unions and industrial relations departments to management.

The author's analysis begins with organized labor's support of Woodrow Wilson for the Presidency in 1912. They were rewarded with the appointment of a number of union members and supporters to posts in his Administration including seats on the U. S. Commission on Industrial Relations. Frank Walsh, the Commission head, used it as a forum to highlight abuses of labor. The support of Wilson's successful 1916 reelection by Walsh and the more conservative AFL put both in positions of power on the eve of World War I.

McCartin discusses that with the outbreak of the war, the government took steps favorable to labor to ensure the uninterrupted production of war material. Government agencies authorized the payment of prevailing wages and the election of shop committees, but stopped short of supporting closed shops. The year 1918 saw the appointment of the War Labor Conference Board, later renamed the National War Labor Board (Labor Board), with equal union and management representation and co-chaired by Walsh and former President Taft. The Labor Board sought to prevent strikes and lockouts, create a right for workers to bargain collectively, as well as support a living wage and minority rights. Given the tight labor markets and Labor Board protection, AFL membership rose almost 50 percent, to 3.2 million from 1917 to 1919.

The Labor Board could be seen as providing a rule of law to the workplace. Further, labor knew that they could seek Labor Board intervention if a favorable collective bargaining agreement could not be reached. The Labor Board legitimized labor's demand for representation and management opposition to union recognition was seen by many as undemocratic and contrary to the democratic principles the Nation was fighting for. AFL leaders trumpeted collective bargaining as industrial democracy and a means of "de-Kaisering" the workplace. The author saw the government's actions during the war as strengthening unions and, in particular, their national leaders, while also protecting labor's radical minority who sought a share of the means of production for labor.

McCartin notes the limited degree of success in organizing industrial unions. He attributes this to employer resistance, the craft orientation of the AFL and the limited power and focus of the Labor Board, attempting to ensure war production rather than increase union strength per se. Labor, which had seen substantial increases in membership and power throughout the war, lost many of these gains following the armistice. Firms had stalled in implementing Labor Board awards as the end of the war drew near, correctly reasoning that the Labor Board would not attempt to impose the same solutions in a peace time climate.

Following the war, employers increasingly used the term industrial democracy as part of a system to increase worker productivity. Industrial democracy to employers meant elected shop committees and company unions, rather than labor unions that excluded supervisors and permitted assistance from national unions. Employers recognized that workers believed that they were entitled to some form of industrial democracy and were willing to voluntarily limit their autocratic power if this would secure greater efficiency in production. This also resulted in some profit-sharing plans, grievance procedures, and job ladders.

McCartin's book is a well-written historical analysis of labor around the time of World War I. The multiple uses of the term industrial democracy is fascinating and the story of labor's struggles will be of interest to historians, economists, political scientists, and others. The book makes a substantial contribution to our understanding of the government's role in the evolution of the collective bargaining process in the United States.

—Robert J. Gitter

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Business of baseball

Legal Bases: Baseball and the Law. By Roger I. Abrams. Philadelphia, PA, Temple University Press, 1998, 226 pp. $29.95.

Major league baseball has both a rich history and an ever-appealing freshness to millions of people from every conceivable background. In the spring, all things seem possible, and as the season unfolds, some dreams become reality—new stars, new records, new champions. But baseball is also a complicated business, with economic realities that affect, and sometimes disrupt, the game. Many fans find the business of baseball confusing when concepts such as salary caps, unfair labor practices, impasses, replacement players, and mediation swirl through the sports page. *Legal Bases* puts this confusion to rest by explaining the legal processes surrounding the employment relationship between baseball owners and players.

The author creatively uses an "All-Star Baseball Law Team" to show how law helped early major league baseball evolve into today's game. Stories about the nine All Stars describe how legal decisions molded relationships between owners and owners, owners and commissioners, and owners and players. The book's focus is the owner and player relationship.

The carefully chosen All Stars provide a unique look at baseball labor relations. For example, John Montgomery Ward, a Hall-of-Famer who earned a law degree while playing for the New York Giants in the 1880s, is the book's leadoff hitter. He formed the first players' union in response to owners reserving players, or tying players to one team. This practice prevented players from selling their skills to the highest bidder.

Ward's efforts to mobilize players against the reserve system serve as the book's backdrop. The ongoing tension between owner attempts to minimize salary competition and player efforts to use competition to increase salaries remains a controversial labor relations issue.

Each All Star story is skillfully interwoven with a concise and sophisticated explanation of related legal concepts. For example, the chapter on Marvin Miller, who transformed the Major League Baseball Players Association into an effective labor union, discusses the National Labor Relations Act (NLRA). Similarly, players Andy Messersmith and Carlton Fisk are All Stars because of cases they took to arbitration. Their chapters include explanations of arbitration procedures, standards, and legal standing.

The chapters build step-by-step to the 1994 strike. The final All Star is Sonia Sotomayor, a Federal district court judge. Judge Sotomayor found that the owners violated the NLRA with unilateral changes in mandatory bargaining issues when no bargaining impasse existed. She issued an injunction ordering the parties back to the bargaining table. Bargaining resumed. An agreement was reached in late 1996.

The book's many anecdotes make it a treat. Some tales are employment related. For example, Branch Rickey is known for signing Jackie Robinson and integrating major league ball. The book mentions this, but details his creation of the comprehensive minor league system. Today, this system is the primary way baseball clubs develop player talent, and it is an important part of the employment relationship between players and owners.

Even less directly related anecdotes add to the book's fascination. Did you know, for example, that President Taft is credited with originating the seventh-inning stretch? He stood, and everyone else followed suit out of respect. Or that Charles O. Finley dubbed James Hunter as "Catfish" because he thought the name would have market appeal?

Legal Bases presents readers with a vibrant example of why and how collective bargaining occurs, and the involved legal processes. But there is more. The book also gives baseball enthusiasts a coherent understanding of the history and role of major league collective bargaining in an appealing format. It may even provide readers who are not baseball fans with a reason to take an interest in the game.

Although other books look at the business of baseball, *Legal Bases* is a unique blend of history, anecdote, and labor relations analysis. Business is a minor story in most baseball books. Some have detailed discussions of business-related topics, but pay little attention to legal processes or collective bargaining. A few others have very sophisticated theoretical and empirical discussions about business and collective bargaining topics, but include few baseball vignettes. None integrate the colorful history of baseball with a comprehensive understanding of labor relations and other business topics as effectively as *Legal Bases*.

—Karen S. Koziara

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Poverty and welfare

It Takes a Nation: A New Agenda for Fighting Poverty. By Rebecca M. Blank. Princeton, NJ, Princeton University Press, 1997, 340 pp.

Written in anticipation of sweeping changes in our Nation's welfare system, *It Takes a Nation: A New Agenda for Fighting Poverty* comprehensively explains our country's approach to dealing with poverty over the last 30 years and, at the same time, works to dispel welfare myths. This book was published soon after passage of the Personal Responsibility and Work Opportunity Reconciliation Act which, among other things, abolished Aid for Families with Dependent Children (AFDC), permitted States more freedom in developing welfare policies, imposed penalties on States that do not meet caseload reduction requirements, and set a time limit on welfare assistance.

Drawing on 30 years of poverty research, the author focuses on three main themes in the book. First, the nature of poverty is very misunderstood in this country. Second, we overestimate the ability of recent economic growth to help the poor escape poverty. Third, Americans do not understand the role of welfare programs.

Regarding the general misunderstanding about who is poor in the United States, a chapter entitled "The Changing Face of Poverty" provides graphs that clearly display race, age, family structure, and educational attainment of the poor and nonpoor in our society. For instance, contrary to what many believe, statistics drawn from the 1994 March Current Population Survey show equal percentages of white and Latino or African Americans among the poor. Also, contrary to popular belief, although the percentage of poor located in central cities increased over the 1970–93 period, the fastest rate of growth occurred in suburban areas.

Blank thoroughly discusses why the economic expansions of the 1980s and the 1990s have not solved the poverty problem as declining real wages among the less skilled offset the opportunities provided by economic growth. The relationship between wages and work behavior is discussed along with a good explanation of how the movement of

jobs from city to suburban locations has affected poverty. Multiple examples are provided showing weekly earnings among single mothers, married couples, and single adults which demonstrate how, for less skilled workers, work alone is not a sufficient mechanism for escaping poverty.

The author also provides an alternative way of evaluating the effectiveness of welfare policy. She argues that evaluating our policy based on program spending and its effect on the poverty rate is incomplete and misleading, causing the general sentiment that our welfare programs have been ineffective. From the author's calculations, based on the 1994 March Current Population Survey, an alternative poverty measure is provided that shows that although the poverty rate would change very little if cash assistance programs were abolished, the gap between the poverty line and income is substantially reduced, making poor families better off.

Besides discussing the three main themes, useful information is provided about the advantages and disadvantages of the move to targeted programs, the shift in control of welfare programs from Federal to State government, and the effectiveness of economic development programs. The author also provides her own recommendations for welfare policy improvement and concludes, as the book title suggests, that "Our government programs will be much more effective if they are implemented in an environment where poverty is recognized as a national problem that affects us all and to which we are all expected to respond."

This book would be useful to policymakers, administrators, and those—like myself—who, because of a lack of broad knowledge regarding our country's welfare policy, feel incapable of drawing a conclusion about the benefits of recent welfare reform initiatives.

—Michelle Weihmann
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Fax-on-demand available

Users of data from the Bureau of Labor Statistics can request a fax of news releases, historical data, and technical information 24 hours a day, 7 days a week, from the Bureau's fax-on-demand system.

Users can receive news releases of major economic indicators (see schedule on back cover) on the morning the data are released. The number to obtain data from the national office is:

(202) 606-6325

Use a touch-tone telephone and follow the voice instructions for entering document codes and your fax telephone number. The fax-on-demand catalog, containing a list of available documents and codes, can be obtained by entering code 1000. You may request up to four documents with each call. Faxes are sent immediately following the request. If your fax line is busy, the system attempts to send the requested material four times before disconnecting.

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This section of the *Review* presents the principal statistical series collected and calculated by the Bureau of Labor Statistics: series on labor force; employment; unemployment; labor compensation; consumer, producer, and international prices; productivity; international comparisons; and injury and illness statistics. In the notes that follow, the data in each group of tables are briefly described; key definitions are given; notes on the data are set forth; and sources of additional information are cited.

General notes

The following notes apply to several tables in this section:

Seasonal adjustment. Certain monthly and quarterly data are adjusted to eliminate the effect on the data of such factors as climatic conditions, industry production schedules, opening and closing of schools, holiday buying periods, and vacation practices, which might prevent short-term evaluation of the statistical series. Tables containing data that have been adjusted are identified as "seasonally adjusted." (All other data are not seasonally adjusted.) Seasonal effects are estimated on the basis of past experience. When new seasonal factors are computed each year, revisions may affect seasonally adjusted data for several preceding years.

Seasonally adjusted data appear in tables 1–14, 16–17, 39, and 43. Seasonally adjusted labor force data in tables 1 and 4–9 were revised in the February 1998 issue of the *Review*. Seasonally adjusted establishment survey data shown in tables 1, 12–14 and 16–17 were revised in the July 1998 *Review* and reflect the experience through March 1998. A brief explanation of the seasonal adjustment methodology appears in "Notes on the data."

Revisions in the productivity data in table 45 are usually introduced in the September issue. Seasonally adjusted indexes and percent changes from month-to-month and quarter-to-quarter are published for numerous Consumer and Producer Price Index series. However, seasonally adjusted indexes are not published for the U.S. average All-Items CPI. Only seasonally adjusted percent changes are available for this series.

Adjustments for price changes. Some data—such as the "real" earnings shown in table 14—are adjusted to eliminate the effect of changes in price. These adjustments are made by dividing current-dollar values by the Consumer Price Index or the appropriate component of the index, then multiplying by 100. For example, given a current hourly wage rate of $3 and a current price index number of 150, where 1982 = 100, the hourly rate expressed in 1982 dollars is $2 ($3/150 x 100 = $2). The $2 (or any other resulting values) are described as "real," "constant," or "1982" dollars.

Sources of information

Data that supplement the tables in this section are published by the Bureau in a variety of sources. Definitions of each series and notes on the data are contained in later sections of these Notes describing each set of data. For detailed descriptions of each data series, see *BLS Handbook of Methods*, Bulletin 2490. Users also may wish to consult *Major Programs of the Bureau of Labor Statistics*, Report 919. News releases provide the latest statistical information published by the Bureau; the major recurring releases are published according to the schedule appearing on the back cover of this issue.

More information about labor force, employment, and unemployment data and the household and establishment surveys underlying the data are available in the Bureau's monthly publication, *Employment and Earnings*. Historical unadjusted and seasonally adjusted data from the household survey are available on the Internet:

http://stats.bls.gov/cpshome.htm

Historically comparable unadjusted and seasonally adjusted data from the establishment survey also are available on the Internet:

http://stats.bls.gov/ceshome.htm

Additional information on labor force data for sub-States are provided in the BLS annual report, *Geographic Profile of Employment and Unemployment.*

For a comprehensive discussion of the Employment Cost Index, see *Employment Cost Indexes and Levels, 1975–95*, BLS Bulletin 2466. The most recent data from the Employee Benefits Survey appear in the following Bureau of Labor Statistics bulletins: *Employee Benefits in Medium and Large Firms; Employee Benefits in Small Private Establishments;* and *Employee Benefits in State and Local Governments*.

More detailed data on consumer and producer prices are published in the monthly periodicals, *The CPI Detailed Report* and *Producer Price Indexes*. For an overview of the 1998 revision of the CPI, see the December 1996 issue of the *Monthly Labor Review*. Additional data on international prices appear in monthly news releases.

For a listing of available industry productivity indexes and their components, see *Productivity Measures for Selected Industries*, BLS Bulletin 2491.

For additional information on international comparisons data, see *International Comparisons of Unemployment*, BLS Bulletin 1979.

Detailed data on the occupational injury and illness series are published in *Occupational Injuries and Illnesses in the United States, by Industry*, a BLS annual bulletin.

Finally, the *Monthly Labor Review* carries analytical articles on annual and longer term developments in labor force, employment, and unemployment; employee compensation and collective bargaining; prices; productivity; international comparisons; and injury and illness data.

Symbols

n.e.c. = not elsewhere classified.
n.e.s. = not elsewhere specified.
p = preliminary. To increase the timeliness of some series, preliminary figures are issued based on representative but incomplete returns.
r = revised. Generally, this revision reflects the availability of later data, but also may reflect other adjustments.

Comparative Indicators

(Tables 1–3)

Comparative indicators tables provide an overview and comparison of major BLS statistical series. Consequently, although many of the included series are available monthly, all measures in these comparative tables are presented quarterly and annually.

Labor market indicators include employment measures from two major surveys and information on rates of change in compensation provided by the Employment Cost Index (ECI) program. The labor force participation rate, the employment-to-population ratio, and unemployment rates for major demographic groups based on the Current Population ("household") Survey are presented, while measures of employment and average weekly hours by major industry sector are given using nonfarm payroll data. The Employment Cost Index (compensation), by major sector and by bargaining status, is chosen from a variety of BLS compensation and wage measures because it provides a comprehensive measure of employer costs for hiring labor, not just outlays for wages, and it is not affected by employment shifts among occupations and industries.

Data on **changes in compensation, prices, and productivity** are presented in table 2.

Measures of rates of change of compensation and wages from the Employment Cost Index program are provided for all civilian nonfarm workers (excluding Federal and household workers) and for all private nonfarm workers. Measures of changes in consumer prices for all urban consumers; producer prices by stage of processing; overall prices by stage of processing; and overall export and import price indexes are given. Measures of productivity (output per hour of all persons) are provided for major sectors.

Alternative measures of wage and compensation rates of change, which reflect the overall trend in labor costs, are summarized in table 3. Differences in concepts and scope, related to the specific purposes of the series, contribute to the variation in changes among the individual measures.

Notes on the data

Definitions of each series and notes on the data are contained in later sections of these notes describing each set of data.

Employment and Unemployment Data

(Tables 1; 4–20)

Household survey data

Description of the series

EMPLOYMENT DATA in this section are obtained from the Current Population Survey, a program of personal interviews conducted monthly by the Bureau of the Census for the Bureau of Labor Statistics. The sample consists of about 50,000 households selected to represent the U.S. population 16 years of age and older. Households are interviewed on a rotating basis, so that three-fourths of the sample is the same for any 2 consecutive months.

Definitions

Employed persons include (1) all those who worked for pay any time during the week which includes the 12th day of the month or who worked unpaid for 15 hours or more in a family-operated enterprise and (2) those who were temporarily absent from their regular jobs because of illness, vacation, industrial dispute, or similar reasons. A person working at more than one job is counted only in the job at which he or she worked the greatest number of hours.

Unemployed persons are those who did not work during the survey week, but were available for work except for temporary illness and had looked for jobs within the preceding 4 weeks. Persons who did not look for work because they were on layoff are also counted among the unemployed. **The unemployment rate** represents the number unemployed as a percent of the civilian labor force.

The **civilian labor force** consists of all employed or unemployed persons in the civilian noninstitutional population. Persons **not in the labor force** are those not classified as employed or unemployed. This group includes discouraged workers, defined as persons who want and are available for a job and who have looked for work sometime in the the past 12 months (or since the end of their last job if they held one within the past 12 months), but are not currently looking, because they believe there are no jobs available or there are none for which they would qualify. The **civilian noninstitutional population** comprises all persons 16 years of age and older who are not inmates of penal or mental institutions, sanitariums, or homes for the aged, infirm, or needy. The **civilian labor force participation** rate is the proportion of the civilian noninstitutional population that is in the labor force. The **employment-population ratio** is employment as a percent of the civilian noninstitutional population.

Notes on the data

From time to time, and especially after a decennial census, adjustments are made in the Current Population Survey figures to correct for estimating errors during the intercensal years. These adjustments affect the comparability of historical data. A description of these adjustments and their effect on the various data series appears in the Explanatory Notes of *Employment and Earnings*.

Labor force data in tables 1 and 4–9 are seasonally adjusted. Since January 1980, national labor force data have been seasonally adjusted with a procedure called X-11 ARIMA which was developed at Statistics Canada as an extension of the standard X-11 method previously used by BLS. A detailed description of the procedure appears in the X-11 *ARIMA Seasonal Adjustment Method*, by Estela Bee Dagum (Statistics Canada, Catalogue No. 12-564E, January 1983).

At the end of each calendar year, historical seasonally adjusted data usually are revised, and projected seasonal adjustment factors are calculated for use during the January–June period. Because of the redesign of the survey, seasonally adjusted data back to 1994 usually are revised. In July, new seasonal adjustment factors, which incorporate the experience through June, are produced for the July–December period, but no revisions are made in the historical data.

Revisions to household data

Data beginning in 1998 are not strictly comparable with data for 1997 and earlier years because of the introduction of new composite estimation procedures and updated population controls. Additional information on these revisions appears in the February 1998 issue of *Employment and Earnings*.

FOR ADDITIONAL INFORMATION on national household survey data, contact the Division of Labor Force Statistics: (202) 606–6378.

Establishment survey data

Description of the series

EMPLOYMENT, HOURS, AND EARNINGS DATA in this section are compiled from payroll records reported monthly on a voluntary basis to the Bureau of Labor Statistics and its cooperating State agencies by about 390,000 establishments representing all industries except agriculture. Industries are classified in accordance with the 1987 *Standard Industrial Classification (SIC) Manual*. In most industries, the sampling probabilities are based on the size of the establishment; most large establishments are therefore in the sample. (An establishment is not necessarily a firm; it may be a branch plant, for example, or warehouse.) Self-employed persons and others not on a regular civilian payroll are outside the scope of the survey because they are excluded from establishment records. This largely accounts for the difference in employment figures between the household and establishment surveys.

Definitions

An **establishment** is an economic unit which produces goods or services (such as a factory or store) at a single location and is engaged in one type of economic activity.

Employed persons are all persons who received pay (including holiday and sick pay) for any part of the payroll period including the 12th day of the month. Persons holding more than one job (about 5 percent of all persons in the labor force) are counted in each establishment which reports them.

Production workers in manufacturing include working supervisors and nonsupervisory workers closely associated with production operations. Those workers mentioned in tables 11–16 include production workers in manufacturing and mining; construction

workers in construction; and nonsupervisory workers in the following industries: transportation and public utilities; wholesale and retail trade; finance, insurance, and real estate; and services. These groups account for about four-fifths of the total employment on private nonagricultural payrolls.

Earnings are the payments production or nonsupervisory workers receive during the survey period, including premium pay for overtime or late-shift work but excluding irregular bonuses and other special payments. **Real earnings** are earnings adjusted to reflect the effects of changes in consumer prices. The deflator for this series is derived from the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Hours represent the average weekly hours of production or nonsupervisory workers for which pay was received, and are different from standard or scheduled hours. **Overtime hours** represent the portion of average weekly hours which was in excess of regular hours and for which overtime premiums were paid.

The **Diffusion Index** represents the percent of industries in which employment was rising over the indicated period, plus one-half of the industries with unchanged employment; 50 percent indicates an equal balance between industries with increasing and decreasing employment. In line with Bureau practice, data for the 1-, 3-, and 6-month spans are seasonally adjusted, while those for the 12-month span are unadjusted. Data are centered within the span. Table 17 provides an index on private nonfarm employment based on 356 industries, and a manufacturing index based on 139 industries. These indexes are useful for measuring the dispersion of economic gains or losses and are also economic indicators.

Notes on the data

Establishment survey data are annually adjusted to comprehensive counts of employment (called "benchmarks"). The latest adjustment, which incorporated March 1997 benchmarks, was made with the release of May 1998 data, published in the July 1998 issue of the *Review*. Coincident with the benchmark adjustment, historical seasonally adjusted data were revised to reflect updated seasonal factors and refinement in the seasonal adjustment procedures. Unadjusted data from April 1997 forward and seasonally adjusted data from January 1994 forward are subject to revision in future benchmarks.

Revisions in State data (table 11) occurred with the publication of January 1998 data.

Beginning in June 1996, the BLS uses the X-12 ARIMA methodology to seasonally adjust establishment survey data. This procedure, developed by the Bureau of the Census, controls for the effect of varying survey intervals (also known as the 4- versus 5-week effect), thereby providing improved measurement of over-the-month changes and underlying economic trends. Revisions of data, usually for the most recent 5-year period, are made once a year coincident with the benchmark revisions.

In the establishment survey, estimates for the most recent 2 months are based on incomplete returns and are published as preliminary in the tables (12–17 in the *Review*). When all returns have been received, the estimates are revised and published as "final" (prior to any benchmark revisions) in the third month of their appearance. Thus, December data are published as preliminary in January and February and as final in March. For the same reasons, quarterly establishment data (table 1) are preliminary for the first 2 months of publication and final in the third month. Thus, fourth-quarter data are published as preliminary in January and February and as final in March.

A comprehensive discussion of the differences between household and establishment data on employment appears in Gloria P. Green, "Comparing employment estimates from household and payroll surveys," *Monthly Labor Review*, December 1969, pp. 9–20.

FOR ADDITIONAL INFORMATION on establishment survey data, contact the Division of Monthly Industry Employment Statistics: (202) 606–6555.

Unemployment data by State

Description of the series

Data presented in this section are obtained from the Local Area Unemployment Statistics (LAUS) program, which is conducted in cooperation with State employment security agencies.

Monthly estimates of the labor force, employment, and unemployment for States and sub-State areas are a key indicator of local economic conditions, and form the basis for determining the eligibility of an area for benefits under Federal economic assistance programs such as the Job Training Partnership Act. Seasonally adjusted unemployment rates are presented in table 10. Insofar as possible, the concepts and definitions underlying these data are those used in the national estimates obtained from the CPS.

Notes on the data

Data refer to State of residence. Monthly data for all States and the District of Columbia are derived using standardized procedures established by BLS. Once a year, estimates are revised to new population controls, usually with publication of January estimates, and benchmarked to annual average CPS levels.

FOR ADDITIONAL INFORMATION on data in this series, call (202) 606–6392 (table 10) or (202) 606–6559 (table 11).

Compensation and Wage Data

(Tables 1–3; 21–27)

COMPENSATION AND WAGE DATA are gathered by the Bureau from business establishments, State and local governments, labor unions, collective bargaining agreements on file with the Bureau, and secondary sources.

Employment Cost Index

Description of the series

The **Employment Cost Index** (ECI) is a quarterly measure of the rate of change in compensation per hour worked and includes wages, salaries, and employer costs of employee benefits. It uses a fixed market basket of labor—similar in concept to the Consumer Price Index's fixed market basket of goods and services—to measure change over time in employer costs of employing labor.

Statistical series on total compensation costs, on wages and salaries, and on benefit costs are available for private nonfarm workers excluding proprietors, the self-employed, and household workers. The total compensation costs and wages and salaries series are also available for State and local government workers and for the civilian nonfarm economy, which consists of private industry and State and local government workers combined. Federal workers are excluded.

The Employment Cost Index probability sample consists of about 4,400 private nonfarm establishments providing about 23,000 occupational observations and 1,000 State and local government establishments providing 6,000 occupational observations selected to represent total employment in each sector. On average, each reporting unit provides wage and compensation information on five well-specified occupations. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

Beginning with June 1986 data, fixed employment weights from the 1980 Census of Population are used each quarter to calculate the civilian and private indexes and the index for State and local governments. (Prior to June 1986, the employment weights are from the 1970 Census of Population.) These fixed weights, also used to derive all of the industry and occupation series indexes, ensure that changes in these indexes reflect only changes in compensa-

tion, not employment shifts among industries or occupations with different levels of wages and compensation. For the bargaining status, region, and metropolitan/nonmetropolitan area series, however, employment data by industry and occupation are not available from the census. Instead, the 1980 employment weights are reallocated within these series each quarter based on the current sample. Therefore, these indexes are not strictly comparable to those for the aggregate, industry, and occupation series.

Definitions

Total compensation costs include wages, salaries, and the employer's costs for employee benefits.

Wages and salaries consist of earnings before payroll deductions, including production bonuses, incentive earnings, commissions, and cost-of-living adjustments.

Benefits include the cost to employers for paid leave, supplemental pay (including nonproduction bonuses), insurance, retirement and savings plans, and legally required benefits (such as Social Security, workers' compensation, and unemployment insurance).

Excluded from wages and salaries and employee benefits are such items as payment-in-kind, free room and board, and tips.

Notes on the data

The Employment Cost Index for changes in wages and salaries in the private nonfarm economy was published beginning in 1975. Changes in total compensation cost—wages and salaries and benefits combined—were published beginning in 1980. The series of changes in wages and salaries and for total compensation in the State and local government sector and in the civilian nonfarm economy (excluding Federal employees) were published beginning in 1981. Historical indexes (June 1981=100) are available on the Internet:

http://stats.bls.gov/ecthome.htm

FOR ADDITIONAL INFORMATION on the Employment Cost Index, contact the Office of Compensation Levels and Trends: (202) 606–6199.

Employee Benefits Survey

Description of the series

Employee benefits data are obtained from the Employee Benefits Survey, an annual survey of the incidence and provisions of selected benefits provided by employers. The survey collects data from a sample of approximately 6,000 private sector and State and local government establishments. The data are presented as a percentage of employees who participate in a certain benefit, or as an average benefit provision (for example, the average number of paid holidays provided to employees per year). Selected data from the survey are presented in table 25 for medium and large private establishments and in table 26 for small private establishments and State and local government.

The survey covers paid leave benefits such as lunch and rest periods, holidays and vacations, and personal, funeral, jury duty, military, parental, and sick leave; sickness and accident, long-term disability, and life insurance; medical, dental, and vision care plans; defined benefit and defined contribution plans; flexible benefits plans; reimbursement accounts; and unpaid parental leave.

Also, data are tabulated on the incidence of several other benefits, such as severance pay, child-care assistance, wellness programs, and employee assistance programs.

Definitions

Employer-provided benefits are benefits that are financed either wholly or partly by the employer. They may be sponsored by a union or other third party, as long as there is some employer financing. However, some benefits that are fully paid for by the employee also are included. For example, long-term care insurance and postretirement life insurance paid entirely by the employee are included because the guarantee of insurability and availability at group premium rates are considered a benefit.

Participants are workers who are covered by a benefit, whether or not they use that benefit. If the benefit plan is financed wholly by employers and requires employees to complete a minimum length of service for eligibility, the workers are considered participants whether or not they have met the requirement. If workers are required to contribute towards the cost of a plan, they are considered participants only if they elect the plan and agree to make the required contributions.

Defined benefit pension plans use predetermined formulas to calculate a retirement benefit, and obligate the employer to provide those benefits. Benefits are generally based on salary, years of service, or both.

Defined contribution plans generally specify the level of employer and employee contributions to a plan, but not the formula for determining eventual benefits. Instead, individual accounts are set up for participants, and benefits are based on amounts credited to these accounts.

Tax-deferred savings plans are a type of defined contribution plan that allow participants to contribute a portion of their salary to an employer-sponsored plan and defer income taxes until withdrawal.

Flexible benefit plans allow employees to choose among several benefits, such as life insurance, medical care, and vacation days, and among several levels of care within a given benefit.

Notes on the data

Surveys of employees in medium and large establishments conducted over the 1979–86 period included establishments that employed at least 50, 100, or 250 workers, depending on the industry (most service industries were excluded). The survey conducted in 1987 covered only State and local governments with 50 or more employees. The surveys conducted in 1988 and 1989 included medium and large establishments with 100 workers or more in private industries. All surveys conducted over the 1979–89 period excluded establishments in Alaska and Hawaii, as well as part-time employees.

Beginning in 1990, surveys of State and local governments and small establishments are conducted in even-numbered years and surveys of medium and large establishments are conducted in odd-numbered years. The small establishment survey includes all private nonfarm establishments with fewer than 100 workers, while the State and local government survey includes all governments, regardless of the number of workers. All three surveys include full- and part-time workers, and workers in all 50 States and the District of Columbia.

FOR ADDITIONAL INFORMATION on the Employee Benefits Survey, contact the Office of Compensation Levels and Trends (202) 606–6222 or the Internet:

http://stats.bls.gov/ebshome.htm

Work stoppages

Description of the series

Data on work stoppages measure the number and duration of major strikes or lockouts (involving 1,000 workers or more) occurring during the month (or year), the number of workers involved, and the amount of time lost because of stoppage. These data are presented in table 27.

Data are largely from newspaper accounts and cover only establishments directly involved in a stoppage. They do not measure the indirect or secondary effect of stoppages on other establishments whose employees are idle owing to material shortages or lack of service.

Definitions

Number of stoppages: The number of strikes and lockouts involving 1,000 work-

ers or more and lasting a full shift or longer.

Workers involved: The number of workers directly involved in the stoppage.

Number of days idle: The aggregate number of workdays lost by workers involved in the stoppages.

Days of idleness as a percent of esti-mated working time: Aggregate workdays lost as a percent of the aggregate number of standard workdays in the period multiplied by total employment in the period.

Notes on the data

This series is not comparable with the one terminated in 1981 that covered strikes involving six workers or more.

FOR ADDITIONAL INFORMATION on work stoppages data, contact the Office of Compensation Levels and Trends: (202) 606–6282, or the Internet:

http://stats.bls.gov/cbahome.htm

Price Data

(Tables 2; 28–38)

PRICE DATA are gathered by the Bureau of Labor Statistics from retail and primary markets in the United States. Price indexes are given in relation to a base period—1982 = 100 for many Producer Price Indexes, 1982–84 = 100 for many Consumer Price Indexes (unless otherwise noted), and 1990 = 100 for International Price Indexes.

Consumer Price Indexes

Description of the series

The **Consumer Price Index** (CPI) is a measure of the average change in the prices paid by urban consumers for a fixed market basket of goods and services. The CPI is calculated monthly for two population groups, one consisting only of urban households whose primary source of income is derived from the employment of wage earners and clerical workers, and the other consisting of all urban households. The wage earner index (CPI-W) is a continuation of the historic index that was introduced well over a half-century ago for use in wage negotiations. As new uses were developed for the CPI in recent years, the need for a broader and more representative index became apparent. The all-urban consumer index (CPI-U), introduced in 1978, is representative of the 1993–95 buying habits of about 87 percent of the noninstitutional population of the United States at that time, compared with 32 percent represented in the CPI-W. In addition to wage earners and clerical workers, the CPI-U covers professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, retirees, and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors' and dentists' fees, and other goods and services that people buy for day-to-day living. The quantity and quality of these items are kept essentially unchanged between major revisions so that only price changes will be measured. All taxes directly associated with the purchase and use of items are included in the index.

Data collected from more than 23,000 retail establishments and 5,800 housing units in 87 urban areas across the country are used to develop the "U.S. city average." Separate estimates for 14 major urban centers are presented in table 29. The areas listed are as indicated in footnote 1 to the table. The area indexes measure only the average change in prices for each area since the base period, and do not indicate differences in the level of prices among cities.

Notes on the data

In January 1983, the Bureau changed the way in which homeownership costs are meaured for the CPI-U. A rental equivalence method replaced the asset-price approach to homeownership costs for that series. In January 1985, the same change was made in the CPI-W. The central purpose of the change was to separate shelter costs from the investment component of home-ownership so that the index would reflect only the cost of shelter services provided by owner-occupied homes. An updated CPI-U and CPI-W were introduced with release of the January 1987 data.

FOR ADDITIONAL INFORMATION on consumer prices, contact the Division of Consumer Prices and Price Indexes: (202) 606–7000.

Producer Price Indexes

Description of the series

Producer Price Indexes (PPI) measure average changes in prices received by domestic producers of commodities in all stages of processing. The sample used for calculating these indexes currently contains about 3,200 commodities and about 80,000 quotations per month, selected to represent the movement of prices of all commodities produced in the manufacturing; agriculture, forestry, and fishing; mining; and gas and electricity and public utilities sectors. The stage-of-processing structure of PPI organizes products by class of buyer and degree of fabrication (that is, finished goods, intermediate goods, and crude materials). The traditional commodity structure of PPI organizes products by similarity of end use or material composition. The industry and product structure of PPI organizes data in accordance with the Standard Industrial Classification (SIC) and the product code extension of the SIC developed by the U.S. Bureau of the Census.

To the extent possible, prices used in calculating Producer Price Indexes apply to the first significant commercial transaction in the United States from the production or central marketing point. Price data are generally collected monthly, primarily by mail questionnaire. Most prices are obtained directly from producing companies on a voluntary and confidential basis. Prices generally are reported for the Tuesday of the week containing the 13th day of the month.

Since January 1992, price changes for the various commodities have been averaged together with implicit quantity weights representing their importance in the total net selling value of all commodities as of 1987. The detailed data are aggregated to obtain indexes for stage-of-processing groupings, commodity groupings, durability-of-product groupings, and a number of special composite groups. All Producer Price Index data are subject to revision 4 months after original publication.

FOR ADDITIONAL INFORMATION on producer prices, contact the Division of Industrial Prices and Price Indexes: (202) 606–7705.

International Price Indexes

Description of the series

The **International Price Program** produces monthly and quarterly export and import price indexes for nonmilitary goods traded between the United States and the rest of the world. The export price index provides a measure of price change for all products sold by U.S. residents to foreign buyers. ("Residents" is defined as in the national income accounts; it includes corporations, businesses, and individuals, but does not require the organizations to be U.S. owned nor the individuals to have U.S. citizenship.) The import price index provides a measure of price change for goods purchased from other countries by U.S. residents.

The product universe for both the import and export indexes includes raw materials, agricultural products, semifinished manufactures, and finished manufactures, including both capital and consumer goods. Price data for these items are collected primarily by mail questionnaire. In nearly all cases, the data are collected directly from the exporter or importer, although in a few cases, prices are obtained from other sources.

To the extent possible, the data gathered refer to prices at the U.S. border for exports

and at either the foreign border or the U.S. border for imports. For nearly all products, the prices refer to transactions completed during the first week of the month. Survey respondents are asked to indicate all discounts, allowances, and rebates applicable to the reported prices, so that the price used in the calculation of the indexes is the actual price for which the product was bought or sold.

In addition to general indexes of prices for U.S. exports and imports, indexes are also published for detailed product categories of exports and imports. These categories are defined according to the five-digit level of detail for the Bureau of Economic Analysis End-use Classification (SITC), and the four-digit level of detail for the Harmonized System. Aggregate import indexes by country or region of origin are also available.

BLS publishes indexes for selected categories of internationally traded services, calculated on an international basis and on a balance-of-payments basis.

Notes on the data

The export and import price indexes are weighted indexes of the Laspeyres type. Price relatives are assigned equal importance within each harmonized group and are then aggregated to the higher level. The values assigned to each weight category are based on trade value figures compiled by the Bureau of the Census. The trade weights currently used to compute both indexes relate to 1990.

Because a price index depends on the same items being priced from period to period, it is necessary to recognize when a product's specifications or terms of transaction have been modified. For this reason, the Bureau's questionnaire requests detailed descriptions of the physical and functional characteristics of the products being priced, as well as information on the number of units bought or sold, discounts, credit terms, packaging, class of buyer or seller, and so forth. When there are changes in either the specifications or terms of transaction of a product, the dollar value of each change is deleted from the total price change to obtain the "pure" change. Once this value is determined, a linking procedure is employed which allows for the continued repricing of the item.

For the export price indexes, the preferred pricing is f.a.s. (free alongside ship) U.S. port of exportation. When firms report export prices f.o.b. (free on board), production point information is collected which enables the Bureau to calculate a shipment cost to the port of exportation. An attempt is made to collect two prices for imports. The first is the import price f.o.b. at the foreign port of exportation, which is consistent with the basis for valuation of imports in the national accounts. The second is the import price c.i.f.(costs, insurance, and freight) at the U.S. port of importation, which also includes the other costs associated with bringing the product to the U.S. border. It does not, however, include duty charges. For a given product, only one price basis series is used in the construction of an index.

FOR ADDITIONAL INFORMATION on international prices, contact the Division of International Prices: (202) 606–7155.

Productivity Data

(Tables 2; 39–42)

Business sector and major sectors

Description of the series

The productivity measures relate real output to real input. As such, they encompass a family of measures which include single-factor input measures, such as output per unit of labor input (output per hour) or output per unit of capital input, as well as measures of multifactor productivity (output per unit of combined labor and capital inputs). The Bureau indexes show the change in output relative to changes in the various inputs. The measures cover the business, nonfarm business, manufacturing, and nonfinancial corporate sectors.

Corresponding indexes of hourly compensation, unit labor costs, unit nonlabor payments, and prices are also provided.

Definitions

Output per hour of all persons (labor productivity) is the quantity of goods and services produced per hour of labor input. **Output per unit of capital services** (capital productivity) is the quantity of goods and services produced per unit of capital services input. **Multifactor productivity** is the quantity of goods and services produced per combined unit of labor and capital inputs.

Compensation per hour is total compensation divided by hours at work. Total compensation equals the wages and salaries of employees plus employers' contributions for social insurance and private benefit plans, plus an estimate of these payments for the self-employed (except for nonfinancial corporations in which there are no self-employed). **Real compensation per hour** is compensation per hour deflated by the change in the Consumer Price Index for All Urban Consumers.

Unit labor costs are the labor compensation costs expended in the production of a unit of output and are derived by dividing compensation by output. **Unit nonlabor payments** include profits, depreciation, interest, and indirect taxes per unit of output. They are computed by subtracting compensation of all persons from current-dollar value of output and dividing by output.

Unit nonlabor costs contain all the components of unit nonlabor payments except unit profits.

Unit profits include corporate profits with inventory valuation and capital consumption adjustments per unit of output.

Hours of all persons are the total hours at work of payroll workers, self-employed persons, and unpaid family workers.

Labor inputs are hours of all persons adjusted for the effects of changes in the education and experience of the labor force.

Capital services are the flow of services from the capital stock used in production. It is developed from measures of the net stock of physical assets—equipment, structures, land, and inventories—weighted by rental prices for each type of asset.

Combined units of labor and capital inputs are derived by combining changes in labor and capital input with weights which represent each component's share of total output. The indexes for capital services, labor inputs, and combined units of labor and capital are based on changing weights which are averages of the shares in the current and preceding year (the Tornquist index-number formula).

Notes on the data

Business sector output is an annually-weighted index constructed by excluding from real gross domestic product (GDP) the following outputs: general government, nonprofit institutions, paid employees of private households, and the rental value of owner-occupied dwellings. Nonfarm business also excludes farming. Private business and private nonfarm business further exclude government enterprises. The measures are supplied by the U.S. Department of Commerce's Bureau of Economic Analysis. Annual estimates of manufacturing sectoral output are produced by the Bureau of Labor Statistics. Quarterly manufacturing output indexes from the Federal Reserve Board are adjusted to these annual output measures by the BLS. Compensation data are developed from data of the Bureau of Economic Analysis and the Bureau of Labor Statistics. Hours data are developed from data of the Bureau of Labor Statistics.

The productivity and associated cost measures in tables 39–42 describe the relationship between output in real terms and the labor and capital inputs involved in its production. They show the changes from period to period in the amount of goods and services produced per unit of input.

Although these measures relate output to

hours and capital services, they do not measure the contributions of labor, capital, or any other specific factor of production. Rather, they reflect the joint effect of many influences, including changes in technology; shifts in the composition of the labor force; capital investment; level of output; changes in the utilization of capacity, energy, material, and research and development; the organization of production; managerial skill; and characteristics and efforts of the work force.

FOR ADDITIONAL INFORMATION on this productivity series, contact the Division of Productivity Research: (202) 606–5606.

Industry productivity measures

Description of the series

The BLS industry productivity data supplement the measures for the business economy and major sectors with annual measures of labor productivity for selected industries at the three- and four-digit levels of the Standard Industrial Classification system. The industry measures differ in methodology and data sources from the productivity measures for the major sectors because the industry measures are developed independently of the National Income and Product Accounts framework used for the major sector measures.

Definitions

Output per employee hour is derived by dividing an index of industry output by an index of aggregate hours of all employees. Output indexes are based on quantifiable units of products or services, or both, combined with value-share weights. Whenever possible, physical quantities are used as the unit of measurement for output. If quantity data are not available for a given industry, data on the constant-dollar value of production are used.

The **labor input** series consist of the hours of all employees (production and nonproduction workers), the hours of all persons (paid employees, partners, proprietors, and unpaid family workers), or the number of employees, depending upon the industry.

Notes on the data

The industry measures are compiled from data produced by the Bureau of Labor Statistics, the Departments of Commerce, Interior, and Agriculture, the Federal Reserve Board, regulatory agencies, trade associations, and other sources.

For most industries, the productivity indexes refer to the output per hour of all employees. For some transportation industries, only indexes of output per employee are prepared. For some trade and service industries, indexes of output per hour of all persons (including self-employed) are constructed.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Industry Productivity Studies: (202) 606–5618.

International Comparisons

(Tables 43–45)

Labor force and unemployment

Description of the series

Tables 43 and 44 present comparative measures of the labor force, employment, and unemployment—approximating U.S. concepts—for the United States, Canada, Australia, Japan, and several European countries. The unemployment statistics (and, to a lesser extent, employment statistics) published by other industrial countries are not, in most cases, comparable to U.S. unemployment statistics. Therefore, the Bureau adjusts the figures for selected countries, where necessary, for all known major definitional differences. Although precise comparability may not be achieved, these adjusted figures provide a better basis for international comparisons than the figures regularly published by each country.

Definitions

For the principal U.S. definitions of the **labor force**, **employment**, and **unemployment**, see the Notes section on Employment and Unemployment Data: Household survey data.

Notes on the data

The adjusted statistics have been adapted to the age at which compulsory schooling ends in each country, rather than to the U.S. standard of 16 years of age and older. Therefore, the adjusted statistics relate to the population aged 16 and older in France, Sweden, and the United Kingdom; 15 and older in Canada, Australia, Japan, Germany, Italy from 1993 onward, and the Netherlands; and 14 and older in Italy prior to 1993. The institutional population is included in the denominator of the labor force participation rates and employment-population ratios for Japan and Germany; it is excluded for the United States and the other countries.

In the U.S. labor force survey, persons on layoff who are awaiting recall to their jobs are classified as unemployed. European and Japanese layoff practices are quite different in nature from those in the United States; therefore, strict application of the U.S. definition has not been made on this point. For further information, see *Monthly Labor Review*, December 1981, pp. 8–11.

The figures for one or more recent years for France, Germany, Italy, the Netherlands, and the United Kingdom are calculated using adjustment factors based on labor force surveys for earlier years and are considered preliminary. The recent-year measures for these countries, therefore, are subject to revision whenever data from more current labor force surveys become available.

There are breaks in the data series for the United States (1990, 1994), France (1992), Italy (1991, 1993), the Netherlands (1988), and Sweden (1987).

For the United States, the break in series reflects a major redesign of the labor force survey questionnaire and collection methodology introduced in January 1994. Revised population estimates based on the 1990 census, adjusted for the estimated undercount, also were incorporated. In 1996, previously published data for the 1990–93 period were revised to reflect the 1990 census-based population controls, adjusted for the undercount. Therefore, data for 1994 onward are not directly comparable with data for 1993 and earlier years because of the redesign, and data for 1990 onward are not directly comparable with data for 1989 and earlier years because of the introduction of the 1990 census-based population controls, adjusted for the undercount. See the Notes section on Employment and Unemployment Data of this *Review*.

For France, the 1992 break reflects the substitution of standardized European Union Statistical Office (EUROSTAT) unemployment statistics for the unemployment data estimated according to the International Labor Office (ILO) definition and published in the Organization for Economic Cooperation and Development (OECD) annual yearbook and quarterly update. This change was made because the EUROSTAT data are more up-to-date than the OECD figures. Also, since 1992, the EUROSTAT definitions are closer to the U.S. definitions than they were in prior years. The impact of this revision was to lower the unemployment rate by 0.1 percentage point in 1992 and 1993, by 0.4 percentage point in 1994, and 0.6 percentage point in 1995.

For Italy, the 1991 break reflects a revision in the method of weighting sample data. The impact was to increase the unemployment rate by approximately 0.3 percentage point, from 6.6 to 6.9 percent in 1991.

In October 1992, the survey methodology was revised and the definition of unemployment was changed to include only those who were actively looking for a job within the 30 days preceding the survey and who

were available for work. In addition, the lower age limit for the labor force was raised from 14 to 15 years. (Prior to these changes, BLS adjusted Italy's published unemployment rate downward by excluding from the unemployed those persons who had not actively sought work in the past 30 days.) The break in the series also reflects the incorporation of the 1991 population census results. The impact of these changes was to raise Italy's adjusted unemployment rate by approximately 1.2 percentage points, from 8.3 to 9.5 percent in fourth-quarter 1992. These changes did not affect employment significantly, except in 1993. Estimates by the Italian Statistical Office indicate that employment declined by about 3 percent in 1993, rather than the nearly 4 percent indicated by the data shown in table 44. This difference is attributable mainly to the incorporation of the 1991 population benchmarks in the 1993 data. Data for earlier years have not been adjusted to incorporate the 1991 census results.

For the Netherlands, a new survey questionnaire was introduced in 1992 that allowed for a closer application of ILO guidelines. EUROSTAT has revised the Dutch series back to 1988 based on the 1992 changes. The 1988 revised unemployment rate is 7.6 percent; the previous estimate for the same year was 9.3 percent.

There have been two breaks in series in the Swedish labor force survey, in 1987 and 1993. Adjustments have been made for the 1993 break back to 1987. In 1987, a new questionnaire was introduced. Questions regarding current availability were added and the period of active workseeking was reduced from 60 days to 4 weeks. These changes lowered Sweden's 1987 unemployment rate by 0.4 percentage point, from 2.3 to 1.9 percent. In 1993, the measurement period for the labor force survey was changed to represent all 52 weeks of the year rather than one week each month and a new adjustment for population totals was introduced. The impact was to raise the unemployment rate by approximately 0.5 percentage point, from 7.6 to 8.1 percent. Statistics Sweden revised its labor force survey data for 1987–92 to take into account the break in 1993. The adjustment raised the Swedish unemployment rate by 0.2 percentage point in 1987 and gradually rose to 0.5 percentage point in 1992.

Beginning with 1987, BLS has adjusted the Swedish data to classify students who also sought work as unemployed. The impact of this change was to increase the adjusted unemployment rate by 0.1 percentage point in 1987 and by 1.8 percentage points in 1994, when unemployment was higher. By 1994, the adjusted unemployment rate had risen from 7.8 to 9.6 percent due to the adjustment to include students.

The net effect of the 1987 and 1993 changes and the BLS adjustment for students seeking work lowered Sweden's 1987 unemployment rate from 2.3 to 2.2 percent.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Manufacturing productivity and labor costs

Description of the series

Table 45 presents comparative indexes of manufacturing labor productivity (output per hour), output, total hours, compensation per hour, and unit labor costs for the United States, Canada, Japan, and nine European countries. These measures are trend comparisons—that is, series that measure changes over time—rather than level comparisons. There are greater technical problems in comparing the levels of manufacturing output among countries.

BLS constructs the comparative indexes from three basic aggregate measures—output, total labor hours, and total compensation. The hours and compensation measures refer to all employed persons (wage and salary earners plus self-employed persons and unpaid family workers) in the United States, Canada, Japan, France, Germany, Norway, and Sweden, and to all employees (wage and salary earners) in the other countries.

Definitions

Output, in general, refers to value added in manufacturing from the national accounts of each country. However, the output series for Japan prior to 1970 is an index of industrial production, and the national accounts measures for the United Kingdom are essentially identical to their indexes of industrial production. While methods of deriving national accounts measures differ from country to country, BLS has reviewed these methods and determined that the series are sufficiently comparable for measuring comparative trends in productivity and unit labor costs.

The 1977–94 output data for the United States are the gross product originating (value added) measures prepared by the Bureau of Economic Analysis of the U.S. Department of Commerce. Comparable manufacturing output data currently are not available prior to 1977. The 1994–95 percent changes in manufacturing output are based on the trend shown by the industrial production index published by the U.S. Federal Reserve Board for the manufacturing sector.

U.S. gross product originating is a chain-type annual-weighted series. (For more information on the U.S. measure, see Robert E. Yuskavage, "Improved Estimates of Gross Product by Industry, 1959–94," *Survey of Current Business*, August 1996, pp. 133–55.) The Japanese value added series is based upon one set of fixed price weights for the years 1970 through 1996. Output series for the other foreign economies also employ fixed price weights, but the weights are updated periodically (for example, every 5 or 10 years).

To preserve the comparability of the U.S. measures with those for other economies, BLS uses gross product originating in manufacturing for the United States for these comparative measures. The gross product originating series differs from the manufacturing output series that BLS publishes in its news releases on quarterly measures of U.S. productivity and costs (and that underlies the measures that appear in tables 39 and 41 in this section). The quarterly measures are on a "sectoral output" basis, rather than a value-added basis. Sectoral output is gross output less intrasector transactions.

Total labor hours refers to hours worked in all countries. The measures are developed from statistics of manufacturing employment and average hours. The series used for France (from 1970 forward), Norway, and Sweden are official series published with the national accounts. Where official total hours series are not available, the measures are developed by BLS using employment figures published with the national accounts, or other comprehensive employment series, and estimates of annual hours worked. For Germany, BLS uses estimates of average hours worked developed by a research institute connected to the Ministry of Labor for use with the national accounts employment figures. For the other countries, BLS constructs its own estimates of average hours.

Denmark has not published estimates of average hours for 1994–96; therefore, the BLS measure of labor input for Denmark ends in 1993.

Total compensation (labor cost) includes all payments in cash or in-kind made directly to employees plus employer expenditures for legally required insurance programs and contractual and private benefit plans. The measures are from the national accounts of each country, except those for Belgium, which are developed by BLS using statistics on employment, average hours, and hourly compensation. For France and Sweden, compensation is increased to account for other significant taxes on payroll or employment. For the United Kingdom, compensation is reduced between 1967 and 1991to account for employment-related subsidies. Self-employed workers are included in the all-employed-persons measures by assuming that their hourly compensation is equal to the average for wage and salary employees.

Notes on the data

In general, the measures relate to total manufacturing as defined by the International Standard Industrial Classification. However, the measures for France (for all years) and Italy (beginning 1970) refer to mining and manufacturing less energy-related products, and the measures for Denmark include mining and exclude manufacturing handicrafts from 1960 to 1966.

The measures for recent years may be based on current indicators of manufacturing output (such as industrial production indexes), employment, average hours, and hourly compensation until national accounts and other statistics used for the long-term measures become available.

FOR ADDITIONAL INFORMATION on this series, contact the Division of Foreign Labor Statistics: (202) 606–5654.

Occupational Injury and Illness Data

(Table 46–47)

Survey of Occupational Injuries and Illnesses

Description of the series

The Survey of Occupational Injuries and Illnesses collects data from employers about their workers' job-related nonfatal injuries and illnesses. The information that employers provide is based on records that they maintain under the Occupational Safety and Health Act of 1970. Self-employed individuals, farms with fewer than 11 employees, employers regulated by other Federal safety and health laws, and Federal, State, and local government agencies are excluded from the survey.

The survey is a Federal-State cooperative program with an independent sample selected for each participating State. A stratified random sample with a Neyman allocation is selected to represent all private industries in the State. The survey is stratified by Standard Industrial Classification and size of employment.

Definitions

Under the Occupational Safety and Health Act, employers maintain records of nonfatal work-related injuries and illnesses that involve one or more of the following: loss of consciousness, restriction of work or motion, transfer to another job, or medical treatment other than first aid.

Occupational injury is any injury such as a cut, fracture, sprain, or amputation that results from a work-related event or a single, instantaneous exposure in the work environment.

Occupational illness is an abnormal condition or disorder, other than one resulting from an occupational injury, caused by exposure to factors associated with employment. It includes acute and chronic illnesses or disease which may be caused by inhalation, absorption, ingestion, or direct contact.

Lost workday injuries and illnesses are cases that involve days away from work, or days of restricted work activity, or both.

Lost workdays include the number of workdays (consecutive or not) on which the employee was either away from work or at work in some restricted capacity, or both, because of an occupational injury or illness. BLS measures of the number and incidence rate of lost workdays were discontinued beginning with the 1993 survey. The number of days away from work or days of restricted work activity does not include the day of injury or onset of illness or any days on which the employee would not have worked, such as a Federal holiday, even though able to work.

Incidence rates are computed as the number of injuries and/or illnesses or lost work days per 100 full-time workers.

Notes on the data

The definitions of occupational injuries and illnesses are from *Recordkeeping Guidelines for Occupational Injuries and Illnesses* (U.S. Department of Labor, Bureau of Labor Statistics, September 1986).

Estimates are made for industries and employment size classes for total recordable cases, lost workday cases, days away from work cases, and nonfatal cases without lost workdays. These data also are shown separately for injuries. Illness data are available for seven categories: occupational skin diseases or disorders, dust diseases of the lungs, respiratory conditions due to toxic agents, poisoning (systemic effects of toxic agents), disorders due to physical agents (other than toxic materials), disorders associated with repeated trauma, and all other occupational illnesses.

The survey continues to measure the number of new work-related illness cases which are recognized, diagnosed, and reported during the year. Some conditions, for example, long-term latent illnesses caused by exposure to carcinogens, often are difficult to relate to the workplace and are not adequately recognized and reported. These long-term latent illnesses are believed to be understated in the survey's illness measure. In contrast, the overwhelming majority of the reported new illnesses are those which are easier to directly relate to workplace activity (for example, contact dermatitis and carpal tunnel syndrome).

Most of the estimates are in the form of incidence rates, defined as the number of injuries and illnesses per 100 equivalent full-time workers. For this purpose, 200,000 employee hours represent 100 employee years (2,000 hours per employee). Full detail on the available measures is presented in the annual bulletin, *Occupational Injuries and Illnesses: Counts, Rates, and Characteristics.*

Comparable data for more than 40 States and territories are available from the BLS Office of Safety, Health and Working Conditions. Many of these States publish data on State and local government employees in addition to private industry data.

Mining and railroad data are furnished to BLS by the Mine Safety and Health Administration and the Federal Railroad Administration. Data from these organizations are included in both the national and State data published annually.

With the 1992 survey, BLS began publishing details on serious, nonfatal incidents resulting in days away from work. Included are some major characteristics of the injured and ill workers, such as occupation, age, gender, race, and length of service, as well as the circumstances of their injuries and illnesses (nature of the disabling condition, part of body affected, event and exposure, and the source directly producing the condition). In general, these data are available nationwide for detailed industries and for individual States at more aggregated industry levels.

FOR ADDITIONAL INFORMATION on occupational injuries and illnesses, contact the Office of Occupational Safety, Health and Working Conditions at (202) 606–6180, or access the Internet at:

http://www.bls.gov/oshhome.htm

Census of Fatal Occupational Injuries

The Census of Fatal Occupational Injuries compiles a complete roster of fatal job-related injuries, including detailed data about the fatally injured workers and the fatal events. The program collects and cross checks fatality information from multiple sources, including death certificates, State and Federal workers' compensation reports, Occupational Safety and Health Administration and Mine Safety and Health Administration records, medical examiner and autopsy reports, media accounts, State motor vehicle fatality records, and follow-up questionnaires to employers.

In addition to private wage and salary workers, the self-employed, family members, and Federal, State, and local government workers are covered by the program. Institutionalized persons, such as prison inmates, are excluded. To be included in the

fatality census, the decedent must have been employed (that is working for pay, compensation, or profit) at the time of the event, engaged in a legal work activity, or present at the site of the incident as a requirement of his or her job.

Definition

A fatal work injury is any intentional or unintentional wound or damage to the body resulting in death from acute exposure to energy, such as heat or electricity or kinetic energy from a crash, or from the absence of such essentials as heat or oxygen caused by a specific event or incident or series of events within a single workday or shift. Fatalities that occur during a person's commute to or from work are excluded from the census, as well as work-related illnesses, which can be difficult to identify due to long latency periods.

Notes on the data

Twenty-eight data elements are collected, coded, and tabulated in the fatality program, including information about the fatally injured worker, the fatal incident, and the machinery or equipment involved. Summary worker demographic data and event characteristics are included in a national news release that is available about 8 months after the end of the reference year. The Census of Fatal Occupational Injuries was initiated in 1992 as a joint Federal-State effort. Most States issue summary information at the time of the national news release.

FOR ADDITIONAL INFORMATION on the Census of Fatal Occupational Injuries contact the BLS Office of Safety, Health, and Working Conditions at (202) 606–6175, or the Internet at:

http://www.bls.gov/oshhome.htm

1. Labor market indicators

Selected indicators	1996	1997	1996	1997				1998		
			IV	I	II	III	IV	I	II	III
Employment data										
Employment status of the civilian noninstitutionalized population (household survey):[1]										
Labor force participation rate	66.8	67.1	67.0	67.1	67.1	67.1	67.1	67.3	67.0	67.0
Employment-population ratio	63.2	63.8	63.4	63.6	63.8	63.8	64.0	64.1	64.1	63.9
Unemployment rate	5.4	4.9	5.3	5.3	4.9	4.9	4.7	4.7	4.4	4.6
Men	5.4	4.9	5.2	5.2	4.8	4.8	4.7	4.5	4.2	4.5
16 to 24 years	12.6	11.8	12.3	12.3	11.5	11.8	11.6	11.4	10.5	11.6
25 years and over	4.1	3.6	3.9	3.9	3.6	3.5	3.4	3.3	3.1	3.2
Women	5.4	5.0	5.5	5.4	5.1	5.0	4.7	4.9	4.6	4.6
16 to 24 years	11.3	10.7	11.4	11.5	10.9	10.5	10.1	10.1	9.5	9.9
25 years and over	4.3	3.9	4.3	4.2	3.9	3.9	3.6	3.8	3.6	3.5
Employment, nonfarm (payroll data), in thousands:[1]										
Total	119,608	122,690	120,655	121,461	122,317	122,995	123,934	124,795	125,516	126,141
Private sector	100,189	103,120	101,223	102,001	102,797	103,392	104,271	105,084	105,714	106,249
Goods-producing	24,493	24,934	24,648	24,787	24,881	24,963	25,108	25,296	25,315	25,210
Manufacturing	18,495	18,657	18,526	18,579	18,625	18,672	18,756	18,825	18,804	18,660
Service-producing	95,115	97,756	96,008	96,674	97,436	98,032	98,826	99,500	100,201	100,931
Average hours:										
Private sector	34.4	34.6	34.5	34.6	34.6	34.6	34.7	34.7	34.6	34.5
Manufacturing	41.6	42.0	41.8	41.9	42.0	41.9	42.1	42.0	41.7	41.7
Overtime	4.5	4.8	4.5	4.8	4.8	4.8	4.9	4.8	4.6	4.6
Employment Cost Index[2]										
Percent change in the ECI, compensation:										
All workers (excluding farm, household and Federal workers)	2.9	3.3	.5	.8	.6	1.0	.8	.8	.8	1.2
Private industry workers	3.1	3.4	.6	.8	.8	.8	.9	.9	.9	1.1
Goods-producing[3]	2.8	2.4	.6	.4	1.0	.7	.4	.7	.8	.7
Service-producing[3]	3.2	3.9	.5	1.1	.7	1.0	1.1	1.0	.8	1.3
State and local government workers	2.6	2.3	.6	.4	.1	1.3	.5	.6	.3	1.5
Workers by bargaining status (private industry):										
Union	2.4	2.1	.5	.2	.6	1.1	.2	.4	1.0	1.1
Nonunion	3.1	3.8	.5	1.1	.8	.8	1.0	1.0	.8	1.1

[1] Quarterly data seasonally adjusted.

[2] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter.

[3] Goods-producing industries include mining, construction, and manufacturing. Service-producing industries include all other private sector industries.

2. Annual and quarterly percent changes in compensation, prices, and productivity

Selected measures	1996	1997	1996	1997				1998		
			IV	I	II	III	IV	I	II	III
Compensation data[1,2]										
Employment Cost Index—compensation (wages, salaries, benefits):										
Civilian nonfarm	2.9	3.3	0.5	0.8	0.6	1.0	0.8	0.8	0.8	1.2
Private nonfarm	3.1	3.4	.6	.8	.8	.8	.9	.9	.9	1.1
Employment Cost Index—wages and salaries:										
Civilian nonfarm	3.3	3.8	.6	.9	.7	1.2	.9	.9	.7	1.3
Private nonfarm	3.4	3.9	.6	1.0	.9	1.0	1.0	1.1	.9	1.3
Price data[1]										
Consumer Price Index (All Urban Consumers): All items	3.3	1.7	.5	.9	.2	.6	.1	.6	.5	.4
Producer Price Index:										
Finished goods	2.8	−1.2	.7	−.5	−.4	.2	−.5	−.8	.5	−.1
Finished consumer goods	3.6	−1.4	.6	−.6	−.2	.4	−.8	−1.0	.8	.0
Capital equipment	.4	−.6	1.0	.1	−.5	−.7	.5	.0	−.5	−.5
Intermediate materials, supplies, and components	.7	−.8	−.6	−.3	.1	.2	−.8	−1.4	.2	.1
Crude materials	14.7	−11.3	7.7	−11.5	−.4	1.3	−.6	−8.8	−1.8	−4.8
Productivity data[3]										
Output per hour of all persons:										
Business sector	2.7	1.7	1.5	1.0	2.0	3.7	.9	4.1	.1	2.4
Nonfarm business sector	2.4	1.4	1.2	.5	1.8	3.6	.9	3.5	.3	2.3
Nonfinancial corporations[4]	2.8	2.6	2.1	1.5	2.5	5.6	1.0	2.6	3.1	–

[1] Annual changes are December-to-December changes. Quarterly changes are calculated using the last month of each quarter. Compensation and price data are not seasonally adjusted, and the price data are not compounded.

[2] Excludes Federal and private household workers.

[3] Annual rates of change are computed by comparing annual averages. Quarterly percent changes reflect annual rates of change in quarterly indexes. The data are seasonally adjusted.

[4] Output per hour of all employees.

NOTE: Dash indicates data not available.

3. Alternative measures of wage and compensation changes

Components	Quarterly average						Four quarters ending—					
	1997			1998			1997			1998		
	II	III	IV	I	II	III	II	III	IV	I	II	III
Average hourly compensation:[1]												
All persons, business sector	2.6	4.1	5.3	4.9	4.1	3.8	3.5	3.5	4.0	4.2	4.6	4.5
All persons, nonfarm business sector	2.6	3.9	4.9	4.6	4.0	4.0	3.4	3.5	3.9	4.0	4.4	4.4
Employment Cost Index—compensation:												
Civilian nonfarm[2]	.6	1.0	.8	.8	.8	1.2	2.8	3.0	3.3	3.3	3.5	3.7
Private nonfarm	.8	.8	.9	.9	.9	1.1	2.9	3.2	3.4	3.5	3.5	3.8
Union	.6	1.1	.2	.4	1.0	1.1	1.6	2.4	2.1	2.3	2.7	2.7
Nonunion	.8	.8	1.0	1.0	.8	1.1	3.2	3.2	3.8	3.7	3.8	4.0
State and local governments	.1	1.3	.5	.6	.3	1.5	2.4	2.4	2.3	2.5	2.7	3.0
Employment Cost Index—wages and salaries:												
Civilian nonfarm[2]	.7	1.2	.9	.9	.7	1.3	3.2	3.5	3.8	3.7	3.8	4.0
Private nonfarm	.9	1.0	1.0	1.1	.9	1.3	3.3	3.6	3.9	4.0	4.0	4.3
Union	.7	1.1	.5	.5	.8	1.3	2.2	2.8	2.8	2.9	3.0	3.2
Nonunion	.9	1.0	1.1	1.1	.9	1.3	3.5	3.7	4.2	4.2	4.1	4.4
State and local governments	.1	1.6	.6	.5	.2	1.6	2.7	2.7	2.7	2.8	3.0	3.0

[1] Seasonally adjusted. "Quarterly average" is percent change from a quarter ago, at an annual rate.

[2] Excludes Federal and household workers.

4. Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
TOTAL															
Civilian noninstitutional population[1]	200,591	203,133	203,767	203,941	204,098	204,238	204,400	204,547	204,731	204,899	205,085	205,270	205,497	205,699	205,919
Civilian labor force	133,943	136,297	136,406	136,864	137,169	137,493	137,557	137,523	137,242	137,364	137,447	137,296	137,415	138,075	137,976
Participation rate	66.8	67.1	66.9	67.1	67.2	67.3	67.3	67.2	67.0	67.0	67.0	66.9	66.9	67.1	67.0
Employed	126,708	129,558	129,910	130,575	130,777	131,083	131,163	130,994	131,383	131,453	131,209	131,067	131,168	131,765	131,677
Employment-population ratio[2]	63.2	63.8	63.8	64.0	64.1	64.2	64.2	64.0	64.2	64.2	64.0	63.9	63.8	64.1	63.9
Unemployed	7,236	6,739	6,496	6,289	6,392	6,409	6,393	6,529	5,859	5,910	6,237	6,230	6,247	6,310	6,299
Unemployment rate	5.4	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3	4.5	4.5	4.5	4.6	4.6
Not in the labor force	66,647	66,837	67,361	67,077	66,929	66,745	66,844	67,024	67,489	67,535	67,639	67,973	68,064	67,624	67,943
Men, 20 years and over															
Civilian noninstitutional population[1]	88,606	89,879	90,140	90,251	90,339	90,391	90,476	90,502	90,580	90,622	90,700	90,802	90,889	91,003	91,101
Civilian labor force	68,044	69,166	69,193	69,500	69,561	69,652	69,601	69,451	69,697	69,624	69,545	69,790	69,490	69,829	69,815
Participation rate	76.8	77.0	76.8	77.0	77.0	77.1	76.9	76.7	76.9	76.8	76.7	76.9	76.5	76.7	76.6
Employed	64,897	66,284	66,337	66,824	66,676	67,008	66,990	66,753	67,301	67,190	66,950	67,040	66,901	67,185	67,241
Employment-population ratio[2]	73.2	73.7	73.6	74.0	73.8	74.1	74.0	73.8	74.3	74.1	73.8	73.8	73.6	73.8	73.8
Agriculture	2,356	2,356	2,298	2,323	2,314	2,282	2,264	2,168	2,420	2,324	2,333	2,394	2,443	2,424	2,463
Nonagricultural industries	62,541	63,927	64,039	64,501	64,362	64,726	64,726	64,585	64,881	64,866	64,617	64,646	64,457	64,761	64,778
Unemployed	3,146	2,882	2,856	2,676	2,885	2,844	2,611	2,699	2,396	2,434	2,595	2,750	2,589	2,645	2,575
Unemployment rate	4.6	4.2	4.1	3.9	4.1	3.8	3.8	3.9	3.4	3.5	3.7	3.9	3.7	3.8	3.7
Women, 20 years and over															
Civilian noninstitutional population[1]	97,050	97,889	98,144	98,212	98,300	98,420	98,471	98,534	98,583	98,668	98,735	98,778	98,901	98,994	99,037
Civilian labor force	58,094	59,198	59,338	59,348	59,624	59,652	59,721	59,771	59,486	59,573	59,599	59,359	59,712	59,804	59,810
Participation rate	59.9	60.5	60.5	60.4	60.7	60.6	60.6	60.7	60.3	60.4	60.4	60.1	60.4	60.4	60.4
Employed	55,311	56,613	56,919	56,953	57,255	57,040	57,146	57,186	57,075	57,253	57,172	57,000	57,286	57,435	57,422
Employment-population ratio[2]	57.0	57.8	58.0	58.0	58.2	58.0	58.0	58.0	57.9	58.0	57.9	57.7	57.9	58.0	58.0
Agriculture	827	798	814	833	845	811	801	717	705	755	747	793	819	773	778
Nonagricultural industries	54,484	55,815	56,105	56,120	56,410	56,229	56,345	56,470	56,370	56,499	56,424	56,207	56,468	56,663	56,643
Unemployed	2,783	2,585	2,419	2,395	2,369	2,612	2,575	2,585	2,411	2,320	2,427	2,359	2,426	2,368	2,388
Unemployment rate	4.8	4.4	4.1	4.0	4.0	4.4	4.3	4.3	4.1	3.9	4.1	4.0	4.1	4.0	4.0
Both sexes, 16 to 19 years															
Civilian noninstitutional population[1]	14,934	15,365	15,483	15,478	15,459	15,427	15,453	15,511	15,569	15,609	15,651	15,690	15,689	15,702	15,781
Civilian labor force	7,806	7,932	7,875	8,016	7,984	8,189	8,235	8,300	8,059	8,166	8,302	8,147	8,213	8,442	8,351
Participation rate	52.3	51.6	50.9	51.8	51.6	53.1	53.3	53.5	51.8	52.3	53.0	51.9	52.4	53.8	52.9
Employed	6,500	6,661	6,654	6,798	6,846	7,035	7,028	7,055	7,007	7,010	7,088	7,027	6,981	7,145	7,015
Employment-population ratio[2]	43.5	43.4	43.0	43.9	44.3	45.6	45.5	45.5	45.0	44.9	45.3	44.8	44.5	45.5	44.5
Agriculture	261	244	215	228	226	227	270	247	225	256	262	254	267	322	361
Nonagricultural industries	6,239	6,417	6,439	6,570	6,620	6,809	6,758	6,808	6,782	6,754	6,826	6,773	6,715	6,823	6,653
Unemployed	1,306	1,271	1,221	1,218	1,138	1,154	1,207	1,245	1,052	1,156	1,215	1,120	1,232	1,297	1,336
Unemployment rate	16.7	16.0	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2	14.6	13.8	15.0	15.4	16.0
White															
Civilian noninstitutional population[1]	168,317	169,993	170,427	170,545	170,649	170,810	170,917	171,016	171,141	171,257	171,387	171,513	171,655	171,804	171,956
Civilian labor force	113,108	114,693	114,784	115,073	115,263	115,253	115,392	115,297	115,057	115,309	115,137	114,975	115,275	115,776	115,602
Participation rate	67.2	67.5	67.4	67.5	67.5	67.5	67.5	67.4	67.2	67.3	67.2	67.0	67.2	67.4	67.2
Employed	107,808	109,856	110,063	110,604	110,729	110,689	110,842	110,605	110,859	111,025	110,535	110,630	110,708	111,233	111,013
Employment-population ratio[2]	64.1	64.6	64.6	64.9	64.9	64.8	64.9	64.7	64.8	64.8	64.5	64.5	64.5	64.7	64.6
Unemployed	5,300	4,836	4,721	4,469	4,534	4,555	4,550	4,692	4,198	4,284	4,602	4,346	4,567	4,543	4,589
Unemployment rate	4.7	4.2	4.1	3.9	3.9	4.0	3.9	4.1	3.6	3.7	4.0	3.8	4.0	3.9	4.0
Black															
Civilian noninstitutional population[1]	23,604	24,003	24,117	24,149	24,180	24,196	24,229	24,257	24,289	24,317	24,349	24,381	24,418	24,458	24,496
Civilian labor force	15,134	15,529	15,555	15,638	15,709	15,788	15,885	15,971	15,907	15,756	16,013	16,059	15,907	15,982	16,172
Participation rate	64.1	64.7	64.5	64.8	65.0	65.3	65.6	65.8	65.5	64.8	65.8	65.9	65.1	65.3	66.0
Employed	13,542	13,969	14,067	14,128	14,149	14,316	14,349	14,498	14,499	14,344	14,700	14,508	14,476	14,510	14,781
Employment-population ratio[2]	57.4	58.2	58.3	58.5	58.5	59.2	59.2	59.8	59.7	59.0	60.4	59.5	59.3	59.3	60.3
Unemployed	1,592	1,560	1,488	1,510	1,560	1,472	1,535	1,473	1,408	1,412	1,313	1,551	1,431	1,472	1,391
Unemployment rate	10.5	10.0	9.6	9.7	9.9	9.3	9.7	9.2	8.9	9.0	8.2	9.7	9.0	9.2	8.6

See footnotes at end of table.

4. Continued—Employment status of the population, by sex, age, race, and Hispanic origin, monthly data seasonally adjusted

[Numbers in thousands]

Employment status	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Hispanic origin															
Civilian noninstitutional population[1]	19,213	20,321	20,519	20,575	20,629	20,741	20,798	20,851	20,915	20,975	21,036	21,097	21,159	21,224	21,286
Civilian labor force	12,774	13,796	13,896	13,880	13,973	13,954	14,149	14,298	14,369	14,458	14,420	14,240	14,277	14,484	14,418
Participation rate	66.5	67.9	67.7	67.5	67.7	67.3	68.0	68.6	68.7	68.9	68.5	67.5	67.5	68.2	67.7
Employed	11,642	12,726	12,806	12,921	12,921	12,988	13,181	13,305	13,434	13,480	13,328	13,219	13,203	13,413	13,381
Employment-population ratio[2]	60.6	62.6	62.4	62.8	62.6	62.6	63.4	63.8	64.2	64.3	63.4	62.7	62.4	63.2	62.9
Unemployed	1,132	1,069	1,090	959	1,052	966	968	993	935	978	1,092	1,022	1,074	1,071	1,036
Unemployment rate	8.9	7.7	7.8	6.9	7.5	6.9	6.8	6.9	6.5	6.8	7.6	7.2	7.5	7.4	7.2

[1] The population figures are not seasonally adjusted.

[2] Civilian employment as a percent of the civilian noninstitutional population.

NOTE: Detail for the above race and Hispanic-origin groups will not sum to totals because data for the "other races" groups are not presented and Hispanics are included in both the white and black population groups.

5. Selected employment indicators, monthly data seasonally adjusted

[In thousands]

Selected categories	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Characteristic															
Employed, 16 years and over	126,708	129,558	129,910	130,575	130,777	131,083	131,163	130,994	131,383	131,453	131,209	131,067	131,168	131,765	131,677
Men	68,207	69,685	69,785	70,352	70,195	70,518	70,459	70,297	70,831	70,685	70,570	70,605	70,441	70,751	70,797
Women	58,501	59,873	60,125	60,223	60,582	60,565	60,704	60,697	60,553	60,768	60,640	60,462	60,727	61,014	60,881
Married men, spouse present	42,417	42,642	42,771	42,967	42,952	42,977	42,915	42,779	42,865	42,471	42,539	42,837	42,883	43,255	43,081
Married women, spouse present	32,406	32,755	32,978	32,840	32,975	32,793	32,821	32,872	32,973	32,805	32,805	32,658	32,597	32,870	33,087
Women who maintain families	7,363	7,775	7,865	7,726	7,822	7,784	7,884	7,776	7,813	7,848	7,922	7,846	7,932	8,002	7,928
Class of worker															
Agriculture:															
Wage and salary workers	1,869	1,890	1,815	1,855	1,844	1,949	1,928	1,866	1,987	1,871	1,841	2,018	2,165	2,213	2,309
Self-employed workers	1,518	1,457	1,475	1,493	1,496	1,348	1,324	1,242	1,324	1,395	1,470	1,383	1,345	1,280	1,265
Unpaid family workers	56	51	55	49	54	44	41	32	28	51	48	30	28	43	32
Nonagricultural industries:															
Wage and salary workers	114,171	116,983	117,635	118,083	118,403	118,529	118,961	119,131	118,774	119,013	118,654	118,543	118,676	118,978	118,990
Government	18,217	18,131	18,075	18,170	18,248	18,421	18,378	18,072	18,202	18,034	18,497	18,364	18,257	18,415	18,549
Private industries	95,954	98,852	99,560	99,913	100,155	100,108	100,583	101,058	100,571	100,979	100,157	100,179	100,419	100,563	100,441
Private households	928	915	877	910	946	985	1,035	1,022	1,014	1,015	961	974	853	900	940
Other	95,025	97,937	98,683	99,003	99,209	99,123	99,547	100,037	99,557	99,964	99,195	99,205	99,566	99,663	99,502
Self-employed workers	8,971	9,056	8,930	9,004	8,886	8,964	8,761	8,784	9,069	9,023	8,969	9,094	8,947	9,159	9,064
Unpaid family workers	122	120	92	97	99	131	117	102	124	97	100	91	83	85	91
Persons at work part time[1]															
All industries:															
Part time for economic reasons	4,315	4,068	3,913	3,890	3,855	4,082	3,882	3,902	3,735	3,772	3,837	3,783	3,463	3,365	3,362
Slack work or business conditions	2,388	2,286	2,211	2,221	2,230	2,282	2,123	2,188	2,074	2,104	2,230	2,372	1,989	1,897	2,042
Could only find part-time work	1,605	1,468	1,406	1,386	1,323	1,400	1,455	1,445	1,300	1,344	1,246	1,192	1,175	1,152	1,099
Part time for noneconomic reasons	17,770	18,149	18,113	18,083	18,386	18,515	18,407	18,448	18,084	18,662	18,656	18,584	18,648	18,857	18,641
Nonagricultural industries:															
Part time for economic reasons	4,123	3,879	3,732	3,689	3,654	3,865	3,743	3,726	3,608	3,630	3,676	3,632	3,307	3,152	3,216
Slack work or business conditions	2,263	2,167	2,103	2,100	2,113	2,162	2,025	2,057	1,998	2,024	2,151	2,261	1,900	1,779	1,933
Could only find part-time work	1,576	1,433	1,378	1,346	1,291	1,373	1,433	1,416	1,276	1,315	1,199	1,162	1,143	1,113	1,081
Part time for noneconomic reasons	17,150	17,564	17,537	17,486	17,791	17,898	17,786	17,929	17,470	18,067	18,019	17,972	18,001	18,305	18,082

[1] Excludes persons "with a job but not at work" during the survey period for such reasons as vacation, illness, or industrial disputes.

6. Selected unemployment indicators, monthly data seasonally adjusted

[Unemployment rates]

Selected categories	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Characteristic															
Total, all workers	5.4	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3	4.5	4.5	4.5	4.6	4.6
Both sexes, 16 to 19 years	16.7	16.0	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2	14.6	13.8	15.0	15.4	16.0
Men, 20 years and over	4.6	4.2	4.1	3.9	4.1	3.8	3.8	3.9	3.4	3.5	3.7	3.9	3.7	3.8	3.7
Women, 20 years and over	4.8	4.4	4.1	4.0	4.0	4.4	4.3	4.3	4.1	3.9	4.1	4.0	4.1	4.0	4.0
White, total	4.7	4.2	4.1	3.9	3.9	4.0	3.9	4.1	3.6	3.7	4.0	3.8	4.0	3.9	4.0
Both sexes, 16 to 19 years	14.2	13.6	13.4	12.3	11.2	11.6	12.3	12.8	11.8	12.0	13.7	11.1	13.1	13.0	13.7
Men, 16 to 19 years	15.5	14.3	14.3	12.8	11.3	14.2	14.7	14.9	12.7	14.0	14.7	13.1	14.3	15.0	14.0
Women, 16 to 19 years	12.9	12.8	12.3	11.6	11.1	8.8	9.8	10.6	10.7	9.8	12.6	8.9	11.9	10.7	13.4
Men, 20 years and over	4.1	3.6	3.6	3.4	3.6	3.3	3.2	3.4	2.9	3.1	3.3	3.3	3.3	3.4	3.3
Women, 20 years and over	4.1	3.7	3.5	3.4	3.4	3.7	3.6	3.7	3.4	3.3	3.5	3.3	3.5	3.3	3.4
Black, total	10.5	10.0	9.6	9.7	9.9	9.3	9.7	9.2	8.9	9.0	8.2	9.7	9.0	9.2	8.6
Both sexes, 16 to 19 years	33.6	32.4	29.5	33.3	34.4	30.1	31.5	29.1	24.7	29.4	20.2	28.6	28.8	30.4	29.1
Men, 16 to 19 years	36.9	36.5	30.1	35.0	36.2	31.8	34.7	27.8	23.9	30.2	20.4	30.6	29.7	34.1	35.1
Women, 16 to 19 years	30.3	28.7	28.8	31.9	33.1	28.5	28.4	30.3	25.3	28.8	20.1	26.4	28.1	26.8	23.8
Men, 20 years and over	9.4	8.5	8.3	7.8	8.6	7.9	7.8	7.6	7.4	6.7	6.9	8.9	7.8	7.2	6.9
Women, 20 years and over	8.7	8.8	8.3	8.4	8.1	8.0	8.6	8.2	8.2	8.4	7.7	7.9	7.6	8.1	7.5
Hispanic origin, total	8.9	7.7	7.8	6.9	7.5	6.9	6.8	6.9	6.5	6.8	7.6	7.2	7.5	7.4	7.2
Married men, spouse present	3.0	2.7	2.6	2.4	2.6	2.6	2.5	2.5	2.2	2.4	2.2	2.3	2.4	2.3	2.3
Married women, spouse present	3.6	3.1	2.8	2.8	2.8	3.1	3.1	3.3	2.8	2.8	2.9	2.8	3.2	2.6	2.8
Women who maintain families	8.2	8.1	7.8	8.1	7.7	7.6	7.6	7.6	7.6	7.7	6.9	6.8	6.8	7.6	6.9
Full-time workers	5.3	4.8	4.7	4.4	4.6	4.5	4.5	4.5	4.2	4.2	4.4	4.4	4.4	4.4	4.3
Part-time workers	5.8	5.5	5.3	5.4	5.0	5.4	5.2	5.7	4.8	4.7	5.2	5.3	5.4	5.3	5.7
Industry															
Nonagricultural wage and salary workers	5.5	5.0	4.8	4.7	4.8	4.7	4.7	4.7	4.3	4.5	4.7	4.6	4.7	4.8	4.7
Mining	5.1	3.8	4.5	3.3	3.3	4.0	2.6	3.7	2.3	1.3	3.9	3.7	3.9	3.0	2.2
Construction	10.1	9.0	8.7	7.9	8.9	7.9	7.8	8.6	6.3	8.0	8.0	6.7	7.4	9.0	6.5
Manufacturing	4.8	4.2	3.8	3.6	3.8	3.9	3.7	3.8	3.9	3.6	3.6	4.4	3.9	4.1	4.0
Durable goods	4.5	3.5	3.1	3.1	3.1	3.4	2.9	3.6	3.5	3.0	2.9	4.3	3.7	3.8	3.1
Nondurable goods	5.2	5.1	4.8	4.4	4.9	4.5	5.0	4.2	4.4	4.6	4.6	4.5	4.4	4.6	5.3
Transportation and public utilities	4.1	3.5	3.3	3.1	3.3	3.8	3.2	3.3	3.1	3.0	3.6	3.4	3.7	3.6	3.5
Wholesale and retail trade	6.4	6.2	6.1	6.2	5.8	5.9	5.8	5.4	5.2	5.1	5.7	5.6	5.6	5.8	5.7
Finance, insurance, and real estate	2.7	3.0	2.9	2.4	2.8	2.6	2.6	2.6	2.2	2.0	2.1	2.0	2.7	2.3	2.5
Services	5.4	4.6	4.3	4.4	4.5	4.3	4.7	4.7	4.3	4.8	4.7	4.5	4.7	4.4	4.8
Government workers	2.9	2.6	2.4	2.3	2.1	2.4	2.3	2.9	2.0	2.4	2.0	2.5	2.2	2.3	2.2
Agricultural wage and salary workers	10.2	9.1	9.6	8.6	9.7	10.6	8.6	9.7	8.0	7.9	8.1	8.2	7.0	7.9	6.3
Educational attainment[1]															
Less than a high school diploma	8.7	8.1	7.7	7.5	7.6	7.2	7.0	7.2	7.0	6.7	7.2	7.2	7.1	6.9	6.8
High school graduates, no college	4.7	4.3	4.2	3.8	4.1	3.9	4.0	4.2	3.9	3.7	4.0	4.1	4.0	4.1	4.0
Some college, less than a bachelor's degree	3.7	3.3	2.9	3.1	3.2	3.2	3.1	3.3	2.7	3.1	2.9	3.0	2.8	3.0	3.0
College graduates	2.2	2.0	1.9	1.8	1.8	1.9	1.9	1.9	1.7	1.6	1.7	1.7	1.8	1.6	2.0

[1] Data refer to persons 25 years and over.

7. Duration of unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Weeks of unemployment	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Less than 5 weeks	2,633	2,538	2,558	2,423	2,531	2,488	2,622	2,858	2,632	2,634	2,519	2,625	2,675	2,639	2,857
5 to 14 weeks	2,287	2,138	1,912	2,048	1,922	1,971	1,909	1,979	1,901	1,954	2,084	1,983	1,960	1,999	1,841
15 weeks and over	2,316	2,062	1,990	1,865	1,964	1,811	1,830	1,731	1,417	1,462	1,621	1,600	1,647	1,651	1,589
15 to 26 weeks	1,053	995	919	899	936	773	855	841	584	656	852	793	820	733	699
27 weeks and over	1,262	1,067	1,071	966	1,028	1,038	974	891	833	806	769	807	827	918	890
Mean duration, in weeks	16.7	15.8	16.3	15.6	16.3	15.6	15.6	14.3	14.3	14.6	13.8	14.3	13.5	14.3	14.3
Median duration, in weeks	8.3	8.0	7.7	7.8	7.7	7.4	7.2	6.8	6.4	5.9	6.6	6.6	6.9	6.6	5.8

8. Unemployed persons by reason for unemployment, monthly data seasonally adjusted

[Numbers in thousands]

Reason for unemployment	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Job losers[1]	3,370	3,037	2,934	2,886	2,991	2,807	2,795	2,980	2,631	2,772	2,819	2,908	2,852	2,902	2,815
On temporary layoff	1,021	931	963	815	961	860	821	980	696	786	841	966	978	939	831
Not on temporary layoff	2,349	2,106	1,971	2,071	2,030	1,947	1,975	2,000	1,935	1,986	1,978	1,941	1,874	1,963	1,984
Job leavers	774	795	732	655	692	808	786	744	625	748	766	799	740	724	734
Reentrants	2,512	2,338	2,247	2,229	2,170	2,229	2,266	2,215	2,096	2,033	2,096	2,042	2,132	2,195	2,170
New entrants	580	569	555	560	552	518	543	549	511	493	532	463	503	487	589
Percent of unemployed															
Job losers[1]	46.6	45.1	45.4	45.6	46.7	44.1	43.7	45.9	44.9	45.8	45.4	46.8	45.8	46.0	44.6
On temporary layoff	14.1	13.8	14.9	12.9	15.0	13.5	12.8	15.1	11.9	13.0	13.5	15.6	15.7	14.9	13.2
Not on temporary layoff	32.5	31.3	30.5	32.7	31.7	30.6	30.9	30.8	33.0	32.8	31.8	31.3	30.1	31.1	31.5
Job leavers	10.7	11.8	11.3	10.3	10.8	12.7	12.3	11.5	10.7	12.4	12.3	12.9	11.9	11.5	11.6
Reentrants	34.7	34.7	34.7	35.2	33.9	35.0	35.5	34.1	35.7	33.6	33.7	32.9	34.2	34.8	34.4
New entrants	8.0	8.4	8.6	8.8	8.6	8.1	8.5	8.5	8.7	8.2	8.6	7.5	8.1	7.7	9.3
Percent of civilian labor force															
Job losers[1]	2.5	2.2	2.2	2.1	2.2	2.0	2.0	2.2	1.9	2.0	2.1	2.1	2.1	2.1	2.0
Job leavers	.6	.6	.5	.5	.5	.6	.6	.5	.5	.5	.6	.6	.5	.5	.5
Reentrants	1.9	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.6	1.6	1.6
New entrants	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4

[1] Includes persons who completed temporary jobs.

9. Unemployment rates by sex and age, monthly data seasonally adjusted

[Civilian workers]

Sex and age	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Total, 16 years and over	5.4	4.9	4.8	4.6	4.7	4.7	4.6	4.7	4.3	4.3	4.5	4.5	4.5	4.6	4.6
16 to 24 years	12.0	11.3	11.1	10.9	10.6	10.8	10.8	10.7	9.5	10.0	10.6	10.3	11.1	11.0	10.5
16 to 19 years	16.7	16.0	15.5	15.2	14.3	14.1	14.7	15.0	13.1	14.2	14.6	13.8	15.0	15.4	16.0
16 to 17 years	18.9	18.2	17.5	17.6	17.7	17.3	18.5	16.9	15.2	15.8	18.2	15.2	17.1	17.9	18.8
18 to 19 years	15.2	14.5	14.1	13.6	11.7	11.6	11.3	13.7	11.6	13.2	12.3	12.9	13.8	13.8	14.2
20 to 24 years	9.3	8.5	8.5	8.4	8.5	8.9	8.5	8.0	7.4	7.6	8.1	8.2	8.7	8.3	7.2
25 years and over	4.2	3.8	3.6	3.4	3.6	3.5	3.5	3.6	3.2	3.3	3.4	3.4	3.3	3.4	3.4
25 to 54 years	4.3	3.9	3.7	3.5	3.7	3.6	3.6	3.8	3.3	3.4	3.5	3.5	3.4	3.5	3.6
55 years and over	3.4	3.0	2.8	2.8	2.8	2.7	2.7	2.9	2.5	2.4	2.5	2.8	2.6	2.7	2.6
Men, 16 years and over	5.4	4.9	4.8	4.5	4.7	4.5	4.5	4.6	4.0	4.2	4.4	4.6	4.4	4.6	4.4
16 to 24 years	12.6	11.8	12.0	11.6	11.1	11.2	11.7	11.2	9.7	11.0	10.8	11.4	11.4	12.1	11.0
16 to 19 years	18.1	16.9	16.3	15.6	14.2	16.4	17.0	16.5	14.0	16.0	15.3	15.9	15.8	17.7	16.8
16 to 17 years	20.8	19.1	18.2	18.2	18.4	18.3	21.0	18.5	14.9	17.9	21.0	17.3	18.6	20.7	21.8
18 to 19 years	16.3	15.4	14.8	14.1	11.1	14.9	13.1	15.2	13.3	14.8	11.8	14.6	14.2	15.7	13.5
20 to 24 years	9.5	8.9	9.5	9.3	9.3	8.1	8.7	8.1	7.3	8.1	8.2	8.7	8.9	8.7	7.5
25 years and over	4.1	3.6	3.5	3.2	3.5	3.3	3.2	3.4	3.0	3.0	3.2	3.4	3.2	3.2	3.2
25 to 54 years	4.2	3.7	3.6	3.3	3.6	3.4	3.2	3.5	3.0	3.1	3.3	3.4	3.3	3.2	3.3
55 years and over	3.3	3.1	3.0	2.9	3.4	3.1	2.9	3.1	2.6	2.4	2.5	2.9	2.5	3.1	2.8
Women, 16 years and over	5.4	5.0	4.7	4.7	4.6	4.8	4.8	4.9	4.6	4.4	4.7	4.4	4.7	4.5	4.7
16 to 24 years	11.3	10.7	10.1	10.1	10.2	10.4	9.8	10.1	9.2	9.0	10.3	9.1	10.7	9.8	10.1
16 to 19 years	15.2	15.0	14.7	14.7	14.3	11.6	12.3	13.4	12.1	12.3	13.9	11.5	14.2	12.9	15.1
16 to 17 years	16.9	17.2	16.7	17.0	17.0	16.3	16.0	15.2	15.5	13.5	15.1	12.9	15.5	14.8	15.6
18 to 19 years	14.0	13.6	13.4	13.0	12.4	8.2	9.5	12.2	9.8	11.4	12.7	11.2	13.3	11.9	14.8
20 to 24 years	9.0	8.1	7.4	7.4	7.6	9.7	8.3	7.9	7.5	6.9	8.0	7.7	8.6	7.9	6.9
25 years and over	4.3	3.9	3.7	3.6	3.6	3.7	3.8	3.9	3.6	3.5	3.6	3.5	3.5	3.5	3.6
25 to 54 years	4.4	4.1	3.8	3.8	3.9	3.9	4.1	4.1	3.7	3.8	3.8	3.6	3.6	3.7	3.8
55 years and over	3.5	2.9	2.7	2.6	2.1	2.3	2.4	2.6	2.4	2.4	2.6	2.6	2.8	2.3	2.4

10. Unemployment rates by State, seasonally adjusted

State	Sept. 1997	Aug. 1998	Sept. 1998[P]	State	Sept. 1997	Aug. 1998	Sept. 1998[P]
Alabama	5.1	3.7	4.2	Missouri	4.2	4.1	3.7
Alaska	7.7	5.9	5.9	Montana	5.3	5.0	5.2
Arizona	4.4	4.1	4.3	Nebraska	2.5	2.3	2.1
Arkansas	5.2	4.5	5.0	Nevada	4.0	4.2	3.8
California	6.2	5.8	6.0	New Hampshire	3.0	2.1	2.4
Colorado	3.1	3.3	3.5	New Jersey	5.1	4.8	4.8
Connecticut	4.9	3.5	3.9	New Mexico	6.0	6.4	6.5
Delaware	3.6	3.6	3.4	New York	6.4	5.3	5.5
District of Columbia	8.2	8.8	8.9	North Carolina	3.6	–	–
Florida	4.7	4.4	4.2	North Dakota	2.2	2.4	2.5
Georgia	4.4	4.1	3.9	Ohio	4.5	4.3	4.3
Hawaii	6.3	5.7	6.1	Oklahoma	4.1	4.3	4.3
Idaho	5.3	4.9	5.0	Oregon	5.7	5.7	5.7
Illinois	4.6	4.2	4.5	Pennsylvania	5.1	4.4	4.5
Indiana	3.6	2.7	3.1	Rhode Island	5.2	4.8	4.9
Iowa	3.1	2.5	2.6	South Carolina	4.1	3.5	3.3
Kansas	3.7	3.6	3.7	South Dakota	2.9	2.3	2.4
Kentucky	5.2	4.4	4.1	Tennessee	5.4	4.1	4.1
Louisiana	5.9	6.1	6.1	Texas	5.3	5.0	5.0
Maine	5.4	4.4	4.3	Utah	3.1	3.3	3.3
Maryland	5.2	4.8	4.3	Vermont	3.9	2.9	3.2
Massachusetts	4.0	3.0	3.3	Virginia	3.8	3.1	3.1
Michigan	4.1	3.6	3.6	Washington	4.7	4.7	5.1
Minnesota	3.2	2.1	2.4	West Virginia	6.7	6.8	6.4
Mississippi	6.0	5.1	5.3	Wisconsin	3.7	3.3	3.2
				Wyoming	4.9	4.6	4.6

– Data not available.

[P] = preliminary

11. Employment of workers on nonfarm payrolls by State, seasonally adjusted

[In thousands]

State	Sept. 1997	Aug. 1998	Sept. 1998[P]	State	Sept. 1997	Aug. 1998	Sept. 1998[P]
Alabama	1,869.5	1,886.3	1,882.9	Missouri	2,645.0	2,676.2	2,670.0
Alaska	269.0	274.1	274.2	Montana	368.2	369.9	369.9
Arizona	1,994.0	2,072.9	2,092.6	Nebraska	861.8	877.0	879.2
Arkansas	1,106.1	1,130.1	1,126.1	Nevada	898.7	935.2	942.6
California	13,277.7	13,619.7	13,655.2	New Hampshire	570.5	570.4	566.8
Colorado	1,996.8	2,054.2	2,057.8	New Jersey	3,746.9	3,804.0	3,811.4
Connecticut	1,621.7	1,649.9	1,639.3	New Mexico	709.1	722.5	723.0
Delaware	391.4	401.1	403.0	New York	8,057.7	8,166.8	8,185.9
District of Columbia	614.8	611.9	612.0	North Carolina	3,697.4	–	–
Florida	6,487.4	6,708.3	6,726.1	North Dakota	314.1	317.0	320.1
Georgia	3,649.9	3,740.4	3,751.2	Ohio	5,405.7	5,470.7	5,470.7
Hawaii	534.6	526.6	530.8	Oklahoma	1,397.7	1,430.3	1,437.5
Idaho	510.2	521.3	518.9	Oregon	1,532.2	1,563.8	1,564.6
Illinois	5,795.4	5,879.1	5,874.5	Pennsylvania	5,421.7	5,460.8	5,478.5
Indiana	2,866.2	2,879.3	2,881.6	Rhode Island	452.3	453.4	455.8
Iowa	1,406.4	1,442.2	1,442.7	South Carolina	1,727.8	1,797.3	1,802.6
Kansas	1,275.6	1,305.3	1,310.4	South Dakota	355.8	360.5	358.2
Kentucky	1,722.5	1,759.2	1,754.5	Tennessee	2,590.4	2,616.2	2,610.5
Louisiana	1,858.5	1,882.6	1,884.1	Texas	8,682.6	8,915.1	8,936.0
Maine	557.1	564.9	567.7	Utah	1,002.1	1,024.4	1,026.7
Maryland	2,258.2	2,282.4	2,284.7	Vermont	279.4	283.9	283.9
Massachusetts	3,134.4	3,208.9	3,210.7	Virginia	3,240.2	3,337.7	3,339.7
Michigan	4,462.8	4,541.9	4,548.9	Washington	2,525.5	2,615.1	2,607.4
Minnesota	2,498.1	2,559.6	2,554.2	West Virginia	708.7	717.2	721.5
Mississippi	1,110.5	1,122.6	1,118.1	Wisconsin	2,668.0	2,724.8	2,719.0
				Wyoming	223.2	229.0	224.9

[P] = preliminary

NOTE: Some data in this table may differ from data published elsewhere because of the continual updating of the data base.

12. Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[p]	Oct.[p]
TOTAL	119,608	122,690	123,568	123,944	124,289	124,640	124,832	124,914	125,234	125,562	125,751	125,869	126,191	126,348	126,464
PRIVATE SECTOR	100,189	103,120	103,922	104,282	104,609	104,954	105,112	105,186	105,470	105,734	105,938	106,043	106,269	106,406	106,498
GOODS-PRODUCING	24,493	24,934	25,032	25,099	25,193	25,297	25,314	25,276	25,339	25,301	25,304	25,135	25,253	25,221	25,183
Mining	580	592	592	591	592	592	590	587	582	579	578	571	571	570	565
Metal mining	54	54	53	53	52	52	52	51	51	51	51	50	50	50	50
Oil and gas extraction	322	335	337	337	338	338	338	336	332	329	330	325	323	323	319
Nonmetallic minerals, except fuels	106	108	107	107	108	108	107	107	107	107	107	107	108	108	108
Construction	5,418	5,686	5,722	5,750	5,810	5,881	5,902	5,860	5,930	5,917	5,946	5,970	5,989	5,968	5,987
General building contractors	1,257	1,316	1,326	1,335	1,351	1,365	1,371	1,373	1,385	1,388	1,401	1,410	1,413	1,407	1,414
Heavy construction, except building	777	795	789	788	805	817	813	805	819	819	821	828	829	818	817
Special trades contractors	3,384	3,575	3,607	3,627	3,654	3,699	3,718	3,682	3,726	3,710	3,724	3,732	3,747	3,743	3,756
Manufacturing	18,495	18,657	18,718	18,758	18,791	18,824	18,822	18,829	18,827	18,805	18,780	18,594	18,693	18,683	18,631
Production workers	12,776	12,896	12,945	12,970	13,001	13,023	13,024	13,013	13,007	12,971	12,943	12,746	12,836	12,852	12,815
Durable goods	10,789	10,987	11,060	11,094	11,118	11,154	11,159	11,166	11,170	11,156	11,144	10,989	11,106	11,085	11,053
Production workers	7,386	7,539	7,598	7,621	7,644	7,669	7,676	7,669	7,666	7,642	7,626	7,468	7,577	7,576	7,564
Lumber and wood products	778	793	794	795	798	800	800	801	802	803	801	802	802	804	806
Furniture and fixtures	504	510	511	511	513	517	519	520	524	526	524	528	526	524	523
Stone, clay, and glass products	544	552	554	554	555	562	561	558	561	559	562	561	564	564	564
Primary metal industries	711	711	714	715	716	719	718	719	718	716	717	706	714	713	706
Fabricated metal products	1,449	1,475	1,485	1,488	1,491	1,496	1,497	1,497	1,498	1,495	1,490	1,477	1,490	1,487	1,483
Industrial machinery and equipment	2,115	2,163	2,185	2,191	2,196	2,200	2,202	2,205	2,201	2,201	2,202	2,193	2,190	2,183	2,178
Computer and office equipment	362	375	380	379	381	381	381	381	377	376	375	375	373	371	370
Electronic and other electrical equipment	1,661	1,688	1,702	1,707	1,712	1,719	1,720	1,722	1,720	1,716	1,714	1,701	1,694	1,687	1,675
Electronic components and accessories	617	652	669	672	676	680	680	681	678	677	672	667	661	658	653
Transportation equipment	1,785	1,842	1,861	1,878	1,878	1,882	1,886	1,887	1,890	1,886	1,882	1,772	1,884	1,881	1,888
Motor vehicles and equipment	967	985	990	1,005	1,001	1,002	1,004	1,002	1,004	998	993	878	995	994	1,001
Aircraft and parts	458	500	513	516	519	521	523	525	525	524	524	526	526	524	522
Instruments and related products	855	863	866	867	869	870	866	868	867	866	864	861	857	855	850
Miscellaneous manufacturing industries	388	389	388	386	388	389	390	389	389	388	388	388	385	387	380
Nondurable goods	7,706	7,670	7,658	7,664	7,673	7,670	7,663	7,663	7,657	7,649	7,636	7,605	7,587	7,598	7,578
Production workers	5,390	5,357	5,347	5,349	5,357	5,354	5,348	5,344	5,341	5,329	5,317	5,278	5,259	5,276	5,251
Food and kindred products	1,692	1,691	1,689	1,696	1,702	1,702	1,703	1,704	1,708	1,710	1,706	1,696	1,690	1,703	1,702
Tobacco products	41	41	41	42	41	40	41	41	42	41	40	40	40	39	39
Textile mill products	627	616	612	611	611	608	606	604	605	603	599	594	591	594	590
Apparel and other textile products	868	826	814	810	808	805	796	796	787	780	776	772	762	761	747
Paper and allied products	684	685	685	686	686	688	688	688	686	685	682	680	680	678	677
Printing and publishing	1,540	1,553	1,558	1,560	1,561	1,564	1,564	1,564	1,565	1,566	1,570	1,571	1,568	1,568	1,568
Chemicals and allied products	1,034	1,034	1,034	1,035	1,036	1,035	1,036	1,036	1,035	1,039	1,037	1,038	1,036	1,034	1,037
Petroleum and coal products	142	140	139	138	139	136	136	136	137	136	137	135	134	135	134
Rubber and miscellaneous plastics products	983	995	998	999	1,002	1,006	1,007	1,009	1,008	1,006	1,006	998	1,006	1,007	1,005
Leather and leather products	96	90	88	87	87	86	86	85	84	83	83	81	80	79	79
SERVICE-PRODUCING	95,115	97,756	98,536	98,845	99,096	99,343	99,518	99,638	99,895	100,261	100,447	100,734	100,938	101,127	101,281
Transportation and public utilities	6,253	6,395	6,453	6,456	6,451	6,473	6,494	6,504	6,513	6,534	6,538	6,550	6,570	6,572	6,591
Transportation	4,019	4,106	4,149	4,147	4,135	4,148	4,164	4,170	4,173	4,191	4,196	4,208	4,235	4,232	4,245
Railroad transportation	231	227	227	228	230	231	231	231	231	232	232	231	232	232	231
Local and interurban passenger transit	437	451	452	453	455	456	459	460	453	459	458	466	469	463	466
Trucking and warehousing	1,637	1,667	1,680	1,678	1,676	1,684	1,688	1,690	1,702	1,703	1,709	1,709	1,719	1,714	1,722
Water transportation	174	180	180	180	179	177	181	183	181	185	183	188	192	191	190
Transportation by air	1,107	1,128	1,154	1,151	1,138	1,142	1,145	1,146	1,147	1,151	1,154	1,154	1,161	1,168	1,170
Pipelines, except natural gas	15	14	14	14	14	14	14	14	14	14	14	14	14	14	14
Transportation services	418	439	442	443	443	444	446	446	445	447	446	446	448	450	452
Communications and public utilities	2,234	2,290	2,304	2,309	2,316	2,325	2,330	2,334	2,340	2,343	2,342	2,342	2,335	2,340	2,346
Communications	1,351	1,424	1,443	1,449	1,457	1,466	1,471	1,475	1,484	1,486	1,488	1,488	1,483	1,488	1,496
Electric, gas, and sanitary services	884	866	861	860	859	859	859	859	856	857	854	854	852	852	850
Wholesale trade	6,482	6,648	6,697	6,711	6,731	6,759	6,769	6,783	6,798	6,815	6,821	6,827	6,838	6,864	6,865
Retail trade	21,597	22,011	22,105	22,206	22,245	22,280	22,283	22,259	22,335	22,423	22,448	22,547	22,545	22,608	22,598
Building materials and garden supplies	894	937	938	944	946	954	959	966	971	972	975	977	979	984	984
General merchandise stores	2,702	2,718	2,738	2,761	2,771	2,771	2,756	2,759	2,784	2,788	2,784	2,790	2,784	2,812	2,784
Department stores	2,367	2,389	2,409	2,433	2,434	2,439	2,427	2,428	2,447	2,462	2,457	2,454	2,459	2,477	2,452

See footnotes at end of table.

12. Continued—Employment of workers on nonfarm payrolls by industry, monthly data seasonally adjusted

[In thousands]

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[p]	Oct.[p]
Food stores	3,436	3,496	3,512	3,516	3,517	3,528	3,533	3,536	3,533	3,542	3,538	3,552	3,551	3,557	3,562
Automotive dealers and service stations	2,267	2,314	2,325	2,328	2,329	2,331	2,331	2,333	2,337	2,345	2,351	2,355	2,354	2,358	2,369
New and used car dealers	1,031	1,051	1,055	1,056	1,056	1,056	1,056	1,056	1,058	1,060	1,064	1,066	1,064	1,065	1,068
Apparel and accessory stores	1,098	1,098	1,103	1,105	1,103	1,108	1,100	1,098	1,105	1,108	1,108	1,111	1,112	1,116	1,103
Furniture and home furnishings stores	975	1,009	1,023	1,029	1,035	1,039	1,043	1,048	1,045	1,055	1,058	1,063	1,070	1,073	1,076
Eating and drinking places	7,517	7,636	7,630	7,666	7,682	7,685	7,694	7,645	7,681	7,714	7,726	7,781	7,770	7,792	7,798
Miscellaneous retail establishments	2,709	2,804	2,836	2,857	2,862	2,864	2,867	2,874	2,879	2,901	2,908	2,918	2,925	2,916	2,922
Finance, insurance, and real estate	6,911	7,091	7,151	7,172	7,194	7,213	7,232	7,258	7,289	7,311	7,333	7,370	7,372	7,385	7,410
Finance	3,303	3,413	3,451	3,463	3,478	3,485	3,496	3,512	3,521	3,536	3,547	3,565	3,572	3,572	3,590
Depository institutions	2,019	2,027	2,032	2,035	2,040	2,037	2,039	2,041	2,041	2,044	2,042	2,042	2,042	2,033	2,039
Commercial banks	1,458	1,460	1,462	1,464	1,466	1,463	1,464	1,465	1,463	1,463	1,459	1,459	1,457	1,451	1,454
Savings institutions	266	262	261	261	263	262	262	262	263	264	264	265	264	264	265
Nondepository institutions	522	567	581	582	586	589	593	602	605	611	616	624	628	628	636
Security and commodity brokers	553	597	611	616	620	625	629	633	636	641	648	655	657	662	666
Holding and other investment offices	210	222	227	230	232	234	235	236	239	240	241	244	245	249	249
Insurance	2,226	2,260	2,275	2,281	2,291	2,293	2,297	2,302	2,312	2,320	2,328	2,337	2,339	2,346	2,352
Insurance carriers	1,517	1,535	1,546	1,550	1,558	1,558	1,560	1,566	1,574	1,579	1,586	1,594	1,595	1,599	1,603
Insurance agents, brokers, and service	709	724	729	731	733	735	737	736	738	741	742	743	744	747	749
Real estate	1,382	1,419	1,425	1,428	1,425	1,435	1,439	1,444	1,456	1,455	1,458	1,468	1,461	1,467	1,468
Services[1]	34,454	36,040	36,484	36,638	36,795	36,932	37,020	37,106	37,196	37,350	37,494	37,614	37,691	37,756	37,851
Agricultural services	627	679	692	694	694	696	696	695	706	700	706	713	718	720	723
Hotels and other lodging places	1,715	1,744	1,754	1,754	1,754	1,762	1,756	1,755	1,767	1,769	1,773	1,781	1,786	1,786	1,774
Personal services	1,180	1,182	1,181	1,185	1,178	1,176	1,177	1,178	1,186	1,190	1,186	1,184	1,185	1,178	1,175
Business services	7,293	7,983	8,147	8,226	8,294	8,651	8,384	8,412	8,422	8,491	8,556	8,565	8,619	8,592	8,650
Services to buildings	907	937	948	947	955	960	961	966	965	975	975	980	978	983	988
Personnel supply services	2,654	2,968	3,030	3,074	3,111	3,139	3,152	3,149	3,140	3,156	3,189	3,151	3,178	3,141	3,162
Help supply services	2,352	2,646	2,694	2,741	2,783	2,804	2,820	2,819	2,806	2,818	2,853	2,815	2,850	2,806	2,811
Computer and data processing services	1,228	1,411	1,462	1,475	1,493	1,507	1,522	1,538	1,561	1,578	1,601	1,622	1,632	1,641	1,654
Auto repair services and parking	1,080	1,124	1,134	1,138	1,143	1,147	1,144	1,145	1,146	1,153	1,159	1,162	1,167	1,169	1,169
Miscellaneous repair services	372	376	378	379	380	381	382	382	383	385	387	385	386	388	389
Motion pictures	525	548	556	557	564	563	569	565	563	567	554	564	566	566	567
Amusement and recreation services	1,476	1,573	1,597	1,610	1,625	1,633	1,641	1,647	1,660	1,662	1,670	1,694	1,705	1,732	1,715
Health services	9,478	9,720	9,789	9,807	9,827	9,837	9,852	9,867	9,873	9,887	9,905	9,902	9,919	9,936	9,948
Offices and clinics of medical doctors	1,678	1,743	1,764	1,772	1,779	1,784	1,788	1,796	1,801	1,806	1,813	1,817	1,828	1,837	1,842
Nursing and personal care facilities	1,730	1,755	1,759	1,760	1,761	1,759	1,761	1,761	1,760	1,762	1,761	1,756	1,754	1,757	1,757
Hospitals	3,812	3,869	3,894	3,901	3,908	3,916	3,920	3,925	3,938	3,945	3,953	3,960	3,966	3,973	3,979
Home health care services	675	713	715	714	713	706	702	698	687	684	683	673	670	665	659
Legal services	928	947	956	959	963	964	967	970	972	977	980	984	985	990	995
Educational services	2,030	2,114	2,148	2,155	2,160	2,169	2,179	2,189	2,192	2,195	2,200	2,205	2,198	2,208	2,227
Social services	2,413	2,514	2,548	2,552	2,561	2,570	2,577	2,587	2,595	2,609	2,627	2,657	2,632	2,654	2,661
Child day care services	565	570	572	571	572	575	574	575	577	575	581	583	586	584	586
Residential care	677	717	728	730	736	736	741	744	746	749	747	749	752	759	763
Museums and botanical and zoological gardens	85	90	91	91	91	91	92	92	92	91	91	91	92	93	93
Membership organizations	2,201	2,248	2,252	2,247	2,255	2,260	2,261	2,263	2,265	2,266	2,270	2,272	2,273	2,274	2,281
Engineering and management services	2,844	3,005	3,070	3,089	3,111	3,137	3,148	3,164	3,178	3,212	3,234	3,259	3,264	3,273	3,286
Engineering and architectural services	836	869	881	885	892	897	899	904	910	913	921	925	927	925	926
Management and public relations	870	944	970	975	988	1,004	1,007	1,012	1,011	1,029	1,037	1,052	1,055	1,063	1,071
Government	19,419	19,570	19,646	19,662	19,680	19,686	19,720	19,728	19,764	19,828	19,813	19,826	19,922	19,942	19,966
Federal	2,757	2,699	2,690	2,689	2,688	2,670	2,676	2,671	2,674	2,671	2,674	2,672	2,683	2,692	2,710
Federal, except Postal Service	1,901	1,842	1,829	1,826	1,819	1,822	1,819	1,815	1,814	1,810	1,813	1,810	1,816	1,817	1,826
State	4,606	4,594	4,609	4,613	4,611	4,613	4,613	4,619	4,620	4,637	4,632	4,645	4,661	4,677	4,666
Education	1,911	1,912	1,922	1,923	1,924	1,924	1,924	1,928	1,925	1,932	1,933	1,938	1,949	1,953	1,939
Other State government	2,695	2,682	2,687	2,690	2,687	2,689	2,689	2,691	2,695	2,705	2,699	2,707	2,712	2,724	2,727
Local	12,056	12,276	12,347	12,360	12,381	12,403	12,431	12,438	12,470	12,520	12,507	12,509	12,578	12,573	12,590
Education	6,748	6,913	6,947	6,959	6,965	6,980	6,999	7,003	7,023	7,053	7,045	7,078	7,128	7,101	7,109
Other local government	5,308	5,363	5,400	5,401	5,416	5,423	5,432	5,435	5,447	5,467	5,462	5,431	5,450	5,472	5,481

[1] Includes other industries not shown separately.

[p] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

13. Average weekly hours of production or nonsupervisory workers on private nonfarm payrolls, by industry, monthly data seasonally adjusted

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[P]	Oct.[P]
PRIVATE SECTOR	34.4	34.6	34.6	34.7	34.7	34.8	34.7	34.6	34.5	34.7	34.6	34.6	34.6	34.4	34.6
GOODS-PRODUCING	41.1	41.3	41.3	41.2	41.4	41.6	41.4	41.0	40.8	41.1	41.0	41.1	41.1	40.7	41.1
MINING	45.3	45.4	45.2	45.2	44.9	45.4	44.4	43.8	44.1	44.6	43.8	44.8	43.8	42.8	43.9
MANUFACTURING	41.6	42.0	42.0	42.1	42.2	42.1	42.0	41.8	41.4	41.8	41.8	41.7	41.7	41.6	41.8
Overtime hours	4.5	4.8	4.8	4.9	4.9	4.9	4.8	4.8	4.5	4.6	4.6	4.6	4.6	4.5	4.5
Durable goods	42.4	42.8	42.8	42.9	43.0	42.8	42.8	42.5	41.9	42.4	42.3	42.2	42.3	42.2	42.3
Overtime hours	4.8	5.1	5.1	5.2	5.2	5.2	5.1	5.0	4.6	4.8	4.8	4.8	4.8	4.7	4.6
Lumber and wood products	40.8	41.0	41.0	41.1	41.0	41.2	41.1	41.2	41.2	41.2	41.3	41.2	41.2	40.8	41.1
Furniture and fixtures	39.4	40.2	40.4	40.6	40.7	41.0	41.0	40.7	40.7	40.7	41.0	40.7	40.7	40.2	41.0
Stone, clay, and glass products	43.3	43.2	43.2	42.9	43.6	43.7	43.6	43.2	43.3	43.5	43.2	43.5	43.6	43.0	43.4
Primary metal industries	44.2	44.9	45.2	45.2	45.2	45.2	44.8	44.6	43.9	44.5	44.4	43.6	44.1	44.2	43.8
Blast furnaces and basic steel products	44.5	44.9	45.4	45.3	45.4	46.0	45.4	45.3	44.9	45.6	45.1	43.8	44.5	44.0	43.0
Fabricated metal products	42.4	42.6	42.6	42.7	42.9	42.7	42.7	42.4	41.8	42.6	42.5	42.4	42.3	42.2	42.5
Industrial machinery and equipment	43.1	43.6	43.6	43.7	43.7	43.6	43.4	43.3	42.6	43.0	43.2	43.0	43.1	42.6	42.3
Electronic and other electrical equipment	41.5	42.0	41.9	42.0	42.0	41.8	41.9	41.4	41.1	41.4	41.4	41.3	41.7	41.2	41.6
Transportation equipment	44.0	44.5	44.3	44.1	44.5	43.9	43.8	43.4	42.1	43.3	42.7	42.6	42.6	43.9	43.8
Motor vehicles and equipment	44.9	45.0	44.6	44.5	44.9	43.9	43.8	43.5	42.0	43.3	42.4	41.7	42.3	44.7	44.0
Instruments and related products	41.7	42.0	42.0	42.2	41.9	41.9	42.0	41.5	41.3	41.4	41.3	41.3	41.4	41.0	41.2
Miscellaneous manufacturing	39.7	40.4	40.4	40.5	40.6	40.4	40.4	40.5	40.1	40.0	40.0	40.0	40.1	39.9	39.9
Nondurable goods	40.5	40.9	40.9	41.0	41.0	41.1	40.9	40.8	40.7	41.0	40.9	41.0	40.9	40.7	41.0
Overtime hours	4.1	4.4	4.4	4.5	4.4	4.4	4.4	4.4	4.2	4.4	4.4	4.4	4.3	4.3	4.4
Food and kindred products	41.0	41.3	41.3	41.5	41.6	41.8	41.5	41.5	41.3	41.8	41.7	42.0	41.5	41.6	41.8
Textile mill products	40.6	41.4	41.5	41.5	41.7	41.8	41.5	41.2	41.0	41.3	41.1	41.0	41.0	39.9	41.1
Apparel and other textile products	37.0	37.3	37.3	37.2	37.5	37.4	37.4	37.2	37.7	37.4	37.4	37.4	37.5	37.1	37.4
Paper and allied products	43.3	43.7	43.7	44.0	43.7	43.6	43.4	43.4	43.0	43.5	43.6	43.5	43.3	43.8	43.8
Printing and publishing	38.2	38.5	38.6	38.8	38.6	38.5	38.5	38.4	38.2	38.4	38.2	38.4	38.5	38.1	38.3
Chemicals and allied products	43.2	43.2	43.4	43.4	43.2	43.5	43.4	43.4	43.1	43.1	43.2	43.0	43.3	43.4	43.2
Rubber and miscellaneous plastics products	41.5	41.8	42.1	42.0	42.1	42.0	41.8	41.5	41.7	42.1	42.0	42.1	41.6	41.3	42.0
Leather and leather products	38.1	38.4	38.3	38.2	38.4	38.3	38.8	37.9	37.3	37.3	37.6	37.0	38.1	37.3	37.5
SERVICE-PRODUCING	32.7	32.9	32.9	32.9	32.9	33.0	33.0	32.8	32.9	33.0	32.9	32.9	32.9	32.8	32.9
TRANSPORTATION AND PUBLIC UTILITIES	39.6	39.7	39.8	39.9	39.9	40.0	39.9	39.8	39.6	39.8	39.5	39.6	39.3	39.2	39.3
WHOLESALE TRADE	38.3	38.4	38.4	38.5	38.3	38.5	38.5	38.3	38.3	38.5	38.2	38.3	38.4	38.3	38.4
RETAIL TRADE	28.8	28.9	29.0	29.0	28.9	29.0	29.0	28.9	29.0	29.1	29.0	29.1	29.0	29.0	29.1

[P] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

14. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry, seasonally adjusted

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[P]	Oct.[P]
PRIVATE SECTOR (in current dollars)	$ 11.82	$ 12.28	$12.43	$12.47	$ 12.50	$12.54	$12.59	$12.63	$12.70	$12.73	$12.76	$12.79	$12.85	$12.87	$12.88
Goods-producing	13.47	13.92	14.05	14.10	14.15	14.16	14.21	14.25	14.25	14.27	14.28	14.31	14.39	14.39	14.42
Mining	15.62	16.17	16.37	16.48	16.46	16.47	16.76	16.82	16.72	16.77	16.73	16.88	17.10	17.13	17.34
Construction	15.47	16.03	16.17	16.24	16.34	16.27	16.34	16.40	16.45	16.46	16.51	16.64	16.67	16.56	16.69
Manufacturing	12.77	13.17	13.30	13.34	13.37	13.38	13.42	13.46	13.44	13.47	13.47	13.42	13.52	13.59	13.56
Excluding overtime	12.12	12.45	12.58	12.61	12.63	12.66	12.69	12.73	12.76	12.78	12.76	12.71	12.81	12.87	12.87
Service-producing	11.26	11.73	11.88	11.93	11.95	12.00	12.06	12.10	12.19	12.23	12.26	12.30	12.35	12.38	12.39
Transportation and public utilities	14.45	14.93	15.05	15.10	15.16	15.21	15.25	15.27	15.32	15.31	15.29	15.33	15.35	15.39	15.38
Wholesale trade	12.87	13.44	13.63	13.72	13.71	13.75	13.81	13.84	13.88	14.00	13.98	14.07	14.16	14.11	14.19
Retail trade	7.99	8.34	8.46	8.49	8.51	8.56	8.59	8.64	8.70	8.72	8.73	8.78	8.83	8.86	8.81
Finance, insurance, and real estate	12.80	13.33	13.60	13.65	13.66	13.72	13.83	13.85	14.00	14.03	14.07	14.10	14.16	14.16	14.24
Services	11.79	12.28	12.43	12.48	12.50	12.54	12.60	12.65	12.76	12.81	12.87	12.90	12.95	13.00	13.02
PRIVATE SECTOR (in constant (1982) dollars)	7.43	7.55	7.60	7.62	7.63	7.66	7.69	7.72	7.74	7.73	7.75	7.75	7.78	7.79	–

– Data not available.

[P] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

15. Average hourly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[P]	Oct.[P]
PRIVATE SECTOR	$ 11.82	$ 12.28	$12.45	$12.53	$12.53	$12.60	$12.65	$12.68	$12.69	$12.70	$12.66	$12.66	$12.74	$12.88	$12.91
MINING	15.62	16.17	16.23	16.41	16.52	16.65	16.89	16.89	16.84	16.73	16.73	16.81	16.94	17.15	17.19
CONSTRUCTION	15.47	16.03	16.33	16.28	16.37	16.25	16.21	16.29	16.34	16.42	16.44	16.63	16.74	16.76	16.85
MANUFACTURING	12.77	13.17	13.28	13.36	13.47	13.40	13.41	13.47	13.46	13.47	13.43	13.37	13.44	13.60	13.54
Durable goods	13.33	13.73	13.88	13.95	14.07	13.96	13.96	14.02	13.96	13.98	13.94	13.77	13.93	14.07	14.02
Lumber and wood products	10.44	10.77	10.87	10.91	10.93	10.90	10.91	10.95	10.99	11.06	11.10	11.18	11.19	11.20	11.24
Furniture and fixtures	10.15	10.55	10.67	10.69	10.79	10.75	10.77	10.80	10.85	10.79	10.81	10.90	10.95	11.04	11.01
Stone, clay, and glass products	12.82	13.18	13.32	13.36	13.39	13.39	13.45	13.46	13.63	13.58	13.58	13.60	13.63	13.83	13.72
Primary metal industries	14.97	15.22	15.33	15.38	15.42	15.47	15.46	15.52	15.66	15.54	15.53	15.56	15.44	15.64	15.36
Blast furnaces and basic steel products	17.80	18.03	18.26	18.28	18.15	18.33	18.34	18.32	18.66	18.55	18.53	18.49	18.46	18.81	18.18
Fabricated metal products	12.50	12.79	12.86	12.93	13.03	12.99	12.98	13.01	12.89	13.02	13.00	12.89	13.06	13.15	13.08
Industrial machinery and equipment	13.59	14.07	14.23	14.30	14.41	14.34	14.36	14.36	14.32	14.36	14.40	14.42	14.44	14.51	14.53
Electronic and other electrical equipment	12.18	12.70	12.91	13.00	13.13	13.00	12.97	13.06	13.09	13.05	13.08	13.15	13.12	13.20	13.12
Transportation equipment	17.19	17.56	17.88	17.94	18.09	17.75	17.77	17.92	17.71	17.65	17.45	16.88	17.32	17.52	17.53
Motor vehicles and equipment	17.74	18.06	18.47	18.53	18.66	18.24	18.31	18.52	18.35	18.18	17.84	16.87	17.60	17.83	17.78
Instruments and related products	13.13	13.51	13.59	13.66	13.68	13.64	13.67	13.73	13.75	13.75	13.71	13.74	13.76	13.85	13.82
Miscellaneous manufacturing	10.38	10.59	10.64	10.71	10.80	10.79	10.79	10.79	10.76	10.79	10.82	10.84	10.83	10.96	10.98
Nondurable goods	11.97	12.33	12.39	12.48	12.58	12.56	12.57	12.63	12.71	12.71	12.69	12.79	12.73	12.92	12.84
Food and kindred products	11.20	11.49	11.45	11.60	11.71	11.67	11.64	11.70	11.75	11.78	11.76	11.80	11.75	11.96	11.82
Tobacco products	19.35	19.27	18.05	17.88	18.69	18.49	18.24	18.54	18.94	20.35	20.89	20.66	19.06	18.07	17.27
Textile mill products	9.69	10.03	10.11	10.16	10.25	10.26	10.26	10.29	10.39	10.37	10.36	10.36	10.38	10.47	10.42
Apparel and other textile products	7.96	8.25	8.32	8.32	8.42	8.41	8.38	8.43	8.47	8.46	8.50	8.48	8.54	8.63	8.66
Paper and allied products	14.67	15.04	15.17	15.22	15.27	15.18	15.20	15.27	15.44	15.50	15.45	15.63	15.53	15.83	15.62
Printing and publishing	12.65	13.05	13.19	13.24	13.30	13.27	13.32	13.36	13.32	13.32	13.33	13.43	13.46	13.65	13.66
Chemicals and allied products	16.17	16.58	16.65	16.85	16.92	16.89	16.94	16.97	17.15	17.11	17.05	17.19	17.14	17.34	17.32
Petroleum and coal products	19.32	20.18	20.29	20.39	20.55	20.63	20.91	21.16	20.99	20.80	20.71	20.81	20.78	20.79	21.23
Rubber and miscellaneous plastics products	11.24	11.57	11.63	11.64	11.76	11.74	11.77	11.78	11.84	11.85	11.81	11.91	11.84	11.98	11.87
Leather and leather products	8.57	8.98	9.16	9.14	9.21	9.32	9.29	9.32	9.28	9.33	9.35	9.16	9.29	9.33	9.39
TRANSPORTATION AND PUBLIC UTILITIES	14.45	14.93	15.09	15.19	15.17	15.27	15.29	15.24	15.27	15.21	15.22	15.31	15.33	15.44	15.42
WHOLESALE TRADE	12.87	13.44	13.57	13.76	13.72	13.77	13.85	13.86	13.90	13.96	13.89	13.99	14.13	14.10	14.12
RETAIL TRADE	7.99	8.34	8.47	8.51	8.51	8.63	8.62	8.67	8.70	8.71	8.70	8.71	8.74	8.89	8.83
FINANCE, INSURANCE, AND REAL ESTATE	12.80	13.33	13.56	13.72	13.64	13.70	13.95	13.97	13.98	13.99	13.93	13.94	14.11	14.10	14.20
SERVICES	11.79	12.28	12.41	12.57	12.61	12.66	12.75	12.77	12.77	12.75	12.70	12.67	12.75	12.97	13.00

[P] = preliminary.

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

6. Average weekly earnings of production or nonsupervisory workers on private nonfarm payrolls, by industry

Industry	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.[p]	Oct.[p]
PRIVATE SECTOR															
Current dollars	$ 406.61	$ 424.89	$432.02	$436.04	$436.04	$430.92	$437.69	$437.46	$434.00	$439.42	$439.30	$440.57	$447.17	$441.78	$446.69
Seasonally adjusted	–	–	430.08	432.71	433.75	436.39	436.87	437.00	438.15	441.73	441.50	442.53	444.61	442.73	445.65
Constant (1982) dollars	255.73	261.31	264.07	266.53	267.02	263.56	267.54	267.07	264.31	266.96	266.57	267.17	270.85	267.47	269.78
MINING	707.59	734.12	735.22	748.30	746.70	749.25	743.16	733.03	730.86	742.81	736.12	739.64	745.36	735.74	756.36
CONSTRUCTION	603.33	623.57	649.93	615.38	630.25	607.75	614.36	617.39	620.92	643.66	642.80	666.86	671.27	628.50	672.32
MANUFACTURING															
Current dollars	531.23	553.14	560.42	569.14	579.21	561.46	559.20	561.70	549.17	563.05	561.37	549.51	560.45	564.40	567.33
Constant (1982) dollars	334.11	340.18	342.56	347.89	354.69	343.40	341.81	342.92	334.45	342.07	340.89	333.24	339.46	341.44	342.38
Durable goods	565.19	587.64	596.84	604.04	617.67	594.70	593.30	594.45	576.55	594.15	591.06	571.46	587.85	588.13	595.85
Lumber and wood products	425.95	441.57	451.11	451.67	450.32	438.18	441.86	446.76	448.39	457.88	461.76	460.62	465.50	453.60	466.46
Furniture and fixtures	399.91	424.11	434.27	440.43	454.26	436.45	436.19	436.32	430.75	432.68	441.05	439.27	448.95	441.60	455.81
Stone, clay, and glass products	555.11	569.38	584.75	575.82	585.14	566.40	572.97	572.05	584.73	596.16	594.80	594.32	601.08	607.14	603.68
Primary metal industries	661.67	683.38	691.38	699.79	710.86	702.34	691.06	690.64	679.64	691.53	689.53	670.64	676.27	691.29	672.77
Blast furnaces and basic steel products	792.10	809.55	821.70	831.74	834.90	846.85	828.97	828.06	835.97	842.17	833.85	811.71	815.93	829.52	776.29
Fabricated metal products	530.00	544.85	550.41	559.87	573.32	553.37	549.05	549.02	527.20	553.35	553.80	536.22	551.13	547.04	558.52
Industrial machinery and equipment	585.73	613.45	617.58	629.20	645.57	625.22	624.66	624.66	600.01	618.92	622.08	609.97	615.14	606.52	611.71
Electronic and other electrical equipment	505.47	533.40	540.93	555.10	565.90	543.40	539.55	540.68	528.84	537.66	541.51	533.89	544.48	539.88	545.79
Transportation equipment	756.36	781.42	795.66	798.33	824.90	777.45	773.00	783.10	733.19	771.31	748.61	692.08	739.56	755.11	773.07
Motor vehicles and equipment	796.53	812.70	831.15	830.14	863.96	797.09	794.65	813.03	756.02	800.86	761.77	668.05	748.00	779.17	789.43
Instruments and related products	547.52	567.42	569.42	581.92	586.87	571.52	575.51	572.54	558.25	566.50	566.22	557.84	565.54	563.70	569.38
Miscellaneous manufacturing	412.09	427.84	434.11	441.25	447.12	430.52	433.76	437.00	423.94	430.52	431.72	424.93	432.12	430.73	442.49
Nondurable goods	484.79	504.30	509.23	517.92	525.84	513.70	510.34	514.04	508.40	518.57	519.02	519.27	521.93	529.72	529.01
Food and kindred products	459.20	474.54	478.61	489.52	496.50	483.14	476.08	478.53	474.70	488.87	488.04	490.88	492.33	508.30	499.99
Tobacco products	774.00	749.60	714.78	706.26	749.47	698.92	682.18	685.98	700.78	793.65	833.51	811.94	749.06	675.82	676.98
Textile mill products	393.41	415.24	418.55	425.70	432.55	426.82	421.69	423.95	416.64	426.21	429.94	418.54	427.24	422.99	427.22
Apparel and other textile products	294.52	307.73	312.83	312.83	320.80	313.69	310.90	313.60	309.16	316.40	321.30	313.76	321.10	316.72	326.48
Paper and allied products	635.21	657.25	664.45	675.77	681.04	663.37	653.60	658.14	656.20	671.15	672.08	672.09	669.34	699.69	684.16
Printing and publishing	483.23	502.43	513.09	520.33	521.36	504.26	508.82	513.02	503.50	507.49	505.21	511.68	518.21	526.89	525.91
Chemicals and allied products	698.54	716.26	720.95	736.35	744.48	734.72	733.50	736.50	735.74	735.73	736.56	734.01	737.02	754.29	746.49
Petroleum and coal products	842.35	869.76	878.56	884.93	867.21	918.04	882.40	914.11	898.37	892.32	894.67	932.29	912.24	898.13	932.00
Rubber and miscellaneous plastics products	466.46	483.63	487.30	494.70	505.68	491.91	489.63	488.87	485.44	496.52	496.02	489.50	490.18	494.77	496.17
Leather and leather products	326.52	344.83	353.58	351.89	357.35	352.30	353.02	351.36	338.72	348.94	356.24	338.00	355.81	347.08	354.00
TRANSPORTATION AND PUBLIC UTILITIES	572.22	592.72	600.58	613.68	603.77	600.11	610.07	600.46	597.06	600.80	602.71	607.81	611.67	608.34	606.01
WHOLESALE TRADE	492.92	516.10	521.09	532.51	526.85	524.64	533.23	532.22	529.59	536.06	531.99	535.82	546.83	538.62	542.21
RETAIL TRADE	230.11	241.03	243.94	245.09	248.49	242.50	247.39	248.83	249.69	252.59	254.91	259.56	261.33	258.70	255.19
FINANCE, INSURANCE, AND REAL ESTATE	459.52	481.21	486.80	503.52	489.68	494.57	517.55	514.10	504.68	505.04	501.48	503.23	520.66	507.60	512.62
SERVICES	382.00	400.33	404.57	412.30	411.09	410.18	418.20	417.58	413.75	414.38	415.29	416.84	423.30	418.93	423.80

[p] = preliminary.
NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

17. Diffusion indexes of employment change, seasonally adjusted

[In percent]

Timespan and year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov	Dec.
	Private nonfarm payrolls, 356 industries											
Over 1-month span:												
1996	50.8	64.6	59.6	56.6	62.8	61.0	57.3	61.5	56.0	62.5	62.2	60.7
1997	58.0	61.4	59.8	63.6	60.1	54.6	61.1	59.1	60.0	64.3	62.4	64.9
1998	63.8	58.7	59.6	56.9	56.6	59.0	55.1	53.9	52.8	51.0	–	–
Over 3-month span:												
1996	61.9	62.8	64.0	63.8	63.5	64.9	64.2	61.5	63.9	64.2	67.0	66.6
1997	64.9	63.3	65.6	66.2	63.9	61.2	60.1	65.9	67.4	68.1	70.8	71.9
1998	68.4	67.3	64.2	61.7	60.4	58.4	57.2	56.3	54.1	–	–	–
Over 6-month span:												
1996	62.8	65.4	64.7	65.7	66.2	65.0	66.4	66.0	66.2	67.6	66.9	66.3
1997	67.6	67.0	65.3	64.9	65.6	67.3	68.0	67.3	70.6	72.3	73.3	72.6
1998	72.1	70.9	69.4	63.5	64.5	61.2	57.6	–	–	–	–	–
Over 12-month span:												
1996	64.5	66.7	64.5	65.6	68.5	67.3	67.7	66.4	68.0	69.9	69.1	68.3
1997	69.8	67.6	69.2	70.1	69.8	69.8	71.2	71.2	71.1	73.0	72.9	72.3
1998	71.2	69.5	69.7	66.2	–	–	–	–	–	–	–	–
	Manufacturing payrolls, 139 industries											
Over 1-month span:												
1996	42.8	54.7	48.2	42.1	55.4	50.7	47.1	55.4	47.8	52.9	54.3	55.4
1997	49.3	54.3	50.0	56.8	51.4	52.2	50.4	48.9	56.5	57.2	56.1	60.8
1998	55.8	51.8	52.5	48.6	45.0	47.8	39.6	47.5	41.7	38.1	–	–
Over 3-month span:												
1996	43.9	46.8	46.0	47.5	46.4	49.3	51.4	50.0	53.6	51.1	57.6	54.7
1997	54.3	49.3	54.3	54.0	55.4	50.4	47.5	52.2	57.9	62.6	64.7	65.5
1998	60.1	59.0	50.7	46.4	43.2	38.8	36.7	35.6	40.6	–	–	–
Over 6-month span:												
1996	42.1	45.3	46.4	47.1	48.2	48.6	51.1	50.4	52.9	52.9	53.2	52.2
1997	54.3	54.3	51.4	52.9	51.4	55.0	56.8	57.6	60.4	64.4	67.6	65.8
1998	61.5	56.8	52.2	39.2	40.6	35.3	30.2	–	–	–	–	–
Over 12-month span:												
1996	43.5	47.5	45.3	45.3	50.4	49.6	50.4	48.6	51.1	55.0	54.0	51.8
1997	57.2	52.5	54.7	56.5	57.9	57.6	58.6	58.6	60.4	60.4	59.4	58.3
1998	50.7	51.1	51.4	41.0	–	–	–	–	–	–	–	–

– Data not available.

NOTE: Figures are the percent of industries with employment increasing plus one-half of the industries with unchanged employment, where 50 percent indicates an equal balance between industries with increasing and decreasing employment. Data for the 2 most recent months shown in each span are preliminary. See the "Definitions" in this section. See "Notes on the data" for a description of the most recent benchmark revision.

18. Annual data: Employment status of the population

[Numbers in thousands]

Employment status	1989	1990	1991	1992	1993	1994	1995	1996	1997
Civilian noninstitutional population	186,393	189,164	190,925	192,805	194,838	196,814	198,584	200,591	203,133
Civilian labor force	123,869	125,840	126,346	128,105	129,200	131,056	132,304	133,943	136,297
Labor force participation rate	66.5	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1
Employed	117,342	118,793	117,718	118,492	120,259	123,060	124,900	126,708	129,558
Employment-population ratio	63.0	62.8	61.7	61.5	61.7	62.5	62.9	63.2	63.8
Agriculture	3,199	3,223	3,269	3,247	3,115	3,409	3,440	3,443	3,399
Nonagricultural industries	114,142	115,570	114,499	115,245	117,144	119,651	121,460	123,264	126,159
Unemployed	6,528	7,047	8,628	9,613	8,940	7,996	7,404	7,236	6,739
Unemployment rate	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9
Not in the labor force	62,523	63,324	64,578	64,700	65,638	65,758	66,280	66,647	66,837

19. Annual data: Employment levels by industry

[In thousands]

Industry	1989	1990	1991	1992	1993	1994	1995	1996	1997
Total employment	107,884	109,403	108,249	108,601	110,713	114,163	117,191	119,608	122,690
Private sector	90,105	91,098	89,847	89,956	91,872	95,036	97,885	100,189	103,120
Goods-producing	25,254	24,905	23,745	23,231	23,352	23,908	24,265	24,493	24,934
Mining	692	709	689	635	610	601	581	580	592
Construction	5,171	5,120	4,650	4,492	4,668	4,986	5,160	5,418	5,686
Manufacturing	19,391	19,076	18,406	18,104	18,075	18,321	18,524	18,495	18,657
Service-producing	82,630	84,497	84,504	85,370	87,361	90,256	92,925	95,115	97,756
Transportation and public utilities	5,614	5,777	5,755	5,718	5,811	5,984	6,132	6,253	6,395
Wholesale trade	6,187	6,173	6,081	5,997	5,981	6,162	6,378	6,482	6,648
Retail trade	19,475	19,601	19,284	19,356	19,773	20,507	21,187	21,597	22,011
Finance, insurance, and real estate	6,668	6,709	6,646	6,602	6,757	6,896	6,806	6,911	7,091
Services	26,907	27,934	28,336	29,052	30,197	31,579	33,117	34,454	36,040
Government	17,779	18,304	18,402	18,645	18,841	19,128	19,305	19,419	19,570
Federal	2,988	3,085	2,966	2,969	2,915	2,870	2,822	2,757	2,699
State	4,182	4,305	4,355	4,408	4,488	4,576	4,635	4,606	4,594
Local	10,609	10,914	11,081	11,267	11,438	11,682	11,849	12,056	12,276

NOTE: See "Notes on the data" for a description of the most recent benchmark revision.

20. Annual data: Average hours and earnings of production or nonsupervisory workers on nonfarm payrolls, by industry

Industry	1989	1990	1991	1992	1993	1994	1995	1996	1997
Private sector:									
Average weekly hours	34.6	34.5	34.3	34.4	34.5	34.7	34.5	34.4	34.6
Average hourly earnings (in dollars)	9.66	10.01	10.32	10.57	10.83	11.12	11.43	11.82	12.28
Average weekly earnings (in dollars)	334.24	345.35	353.98	363.61	373.64	385.86	394.34	406.61	424.89
Mining:									
Average weekly hours	43.0	44.1	44.4	43.9	44.3	44.8	44.7	45.3	45.4
Average hourly earnings (in dollars)	13.26	13.68	14.19	14.54	14.60	14.88	15.30	15.62	16.17
Average weekly earnings (in dollars)	570.18	603.29	630.04	638.31	646.78	666.62	683.91	707.59	734.12
Construction:									
Average weekly hours	37.9	38.2	38.1	38.0	38.5	38.9	38.9	39.0	38.9
Average hourly earnings (in dollars)	13.54	13.77	14.00	14.15	14.38	14.73	15.09	15.47	16.03
Average weekly earnings (in dollars)	513.17	526.01	533.40	537.70	553.63	573.00	587.00	603.33	623.57
Manufacturing:									
Average weekly hours	41.0	40.8	40.7	41.0	41.4	42.0	41.6	41.6	42.0
Average hourly earnings (in dollars)	10.48	10.83	11.18	11.46	11.74	12.07	12.37	12.77	13.17
Average weekly earnings (in dollars)	429.68	441.86	455.03	469.86	486.04	506.94	514.59	531.23	553.14
Transportation and public utilities:									
Average weekly hours	38.3	38.4	38.1	38.3	39.3	39.7	39.4	39.6	39.7
Average hourly earnings (in dollars)	12.57	12.92	13.20	13.43	13.55	13.78	14.13	14.45	14.93
Average weekly earnings (in dollars)	481.43	496.13	502.92	514.37	532.52	547.07	556.72	572.22	592.72
Wholesale trade:									
Average weekly hours	38.0	38.1	38.1	38.2	38.2	38.4	38.3	38.3	38.4
Average hourly earnings (in dollars)	10.39	10.79	11.15	11.39	11.74	12.06	12.43	12.87	13.44
Average weekly earnings (in dollars)	394.82	411.10	424.82	435.10	448.47	463.10	476.07	492.92	516.10
Retail trade:									
Average weekly hours	28.9	28.8	28.6	28.8	28.8	28.9	28.8	28.8	28.9
Average hourly earnings (in dollars)	6.53	6.75	6.94	7.12	7.29	7.49	7.69	7.99	8.34
Average weekly earnings (in dollars)	188.72	194.40	198.48	205.06	209.95	216.46	221.47	230.11	241.03
Finance, insurance, and real estate:									
Average weekly hours	35.8	35.8	35.7	35.8	35.8	35.8	35.9	35.9	36.1
Average hourly earnings (in dollars)	9.53	9.97	10.39	10.82	11.35	11.83	12.32	12.80	13.33
Average weekly earnings (in dollars)	341.17	356.93	370.92	387.36	406.33	423.51	442.29	459.52	481.21
Services:									
Average weekly hours	32.6	32.5	32.4	32.5	32.5	32.5	32.4	32.4	32.6
Average hourly earnings (in dollars)	9.38	9.83	10.23	10.54	10.78	11.04	11.39	11.79	12.28
Average weekly earnings (in dollars)	305.79	319.48	331.45	342.55	350.35	358.80	369.04	382.00	400.33

21. Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
Civilian workers[2]	130.2	130.9	132.0	132.8	134.1	135.2	136.3	137.4	139.0	1.2	3.7
Workers, by occupational group:											
White-collar workers	131.3	131.9	133.1	133.9	135.2	136.5	137.7	138.7	140.6	1.4	4.0
Professional specialty and technical	132.6	133.1	133.7	134.6	135.8	136.7	137.5	138.3	140.0	1.2	3.1
Executive, administrative, and managerial	131.1	131.5	133.2	134.0	135.3	137.3	139.1	139.7	141.7	1.4	4.7
Administrative support, including clerical	132.0	132.6	133.6	134.6	135.8	136.9	138.0	139.3	140.4	.8	3.4
Blue-collar workers	128.3	129.1	129.8	130.9	131.8	132.4	133.2	134.3	135.3	.7	2.7
Service occupations	129.7	131.0	132.0	132.7	134.6	135.6	136.9	137.9	139.4	1.1	3.6
Workers, by industry division:											
Goods-producing	130.1	130.9	131.5	132.7	133.6	134.1	135.1	136.3	137.2	.7	2.7
Manufacturing	131.3	132.1	132.6	133.8	134.6	135.3	136.4	137.2	138.2	.7	2.7
Service-producing	130.2	130.9	132.1	132.9	134.2	135.5	136.8	137.7	139.6	1.4	4.0
Services	132.5	133.2	134.1	134.9	136.5	137.6	138.3	139.0	140.8	1.3	3.2
Health services	134.1	134.4	135.2	135.7	136.7	137.9	138.0	138.5	139.1	.4	1.8
Hospitals	133.6	133.8	134.2	134.6	135.6	136.7	137.1	138.2	139.4	.9	2.8
Educational services	133.2	133.9	134.0	134.2	136.5	137.0	137.5	137.7	140.2	1.8	2.7
Public administration[3]	130.7	131.8	133.0	133.0	134.1	135.1	136.4	137.4	138.9	1.1	3.6
Nonmanufacturing	129.8	130.5	131.7	132.5	133.8	135.1	136.2	137.3	139.0	1.2	3.9
Private industry workers	129.8	130.6	131.7	132.8	133.9	135.1	136.3	137.5	139.0	1.1	3.8
Excluding sales occupations	130.2	130.8	131.9	133.0	134.1	135.2	136.4	137.5	138.8	.9	3.5
Workers, by occupational group:											
White-collar workers	131.1	131.7	133.1	134.1	135.2	136.7	138.1	139.4	141.1	1.2	4.4
Excluding sales occupations	132.0	132.5	133.7	134.8	135.9	137.4	138.8	139.9	141.3	1.0	4.0
Professional specialty and technical occupations	133.3	133.7	134.6	135.9	136.7	137.8	138.8	140.1	141.6	1.1	3.6
Executive, administrative, and managerial occupations	130.9	131.3	133.0	133.9	135.2	137.4	139.4	140.0	141.9	1.4	5.0
Sales occupations	126.7	128.1	130.1	130.7	132.2	133.5	135.3	137.3	140.4	2.3	6.2
Administrative support occupations, including clerical	132.0	132.5	133.7	134.7	135.9	137.0	138.2	139.6	140.6	.7	3.5
Blue-collar workers	128.1	129.0	129.6	130.8	131.7	132.3	133.1	134.3	135.2	.7	2.7
Precision production, craft, and repair occupations	128.2	129.1	129.6	130.9	131.7	131.9	132.9	134.4	135.4	.7	2.8
Machine operators, assemblers, and inspectors	128.7	129.5	130.0	131.2	132.2	133.0	133.6	134.7	135.7	.7	2.6
Transportation and material moving occupations	124.9	125.2	126.1	126.8	128.0	128.9	129.3	129.9	130.7	.6	2.1
Handlers, equipment cleaners, helpers, and laborers	130.0	131.3	132.8	133.4	134.2	135.8	137.0	137.6	138.5	.7	3.2
Service occupations	127.4	128.9	129.8	130.9	133.1	134.1	135.3	136.0	137.3	1.0	3.2
Production and nonsupervisory occupations[4]	129.2	130.0	131.1	132.1	133.2	134.2	135.3	136.6	138.0	1.0	3.6
Workers, by industry division:											
Goods-producing	130.1	130.9	131.4	132.7	133.6	134.1	135.1	136.2	137.1	.7	2.6
Excluding sales occupations	129.8	130.5	131.1	132.3	133.1	133.6	134.5	135.6	136.5	.7	2.6
White-collar occupations	132.2	132.9	133.5	134.8	135.6	136.2	137.7	138.8	139.7	.6	3.0
Excluding sales occupations	131.5	132.1	132.6	133.8	134.5	135.0	136.3	137.4	138.3	.7	2.8
Blue-collar occupations	128.9	129.6	130.2	131.4	132.4	132.8	133.5	134.6	135.5	.7	2.3
Construction	125.9	126.4	127.2	128.7	129.7	129.7	130.6	132.7	133.4	.5	2.9
Manufacturing	131.3	132.1	132.6	133.8	134.6	135.3	136.4	137.2	138.2	.7	2.7
White-collar occupations	132.8	133.6	133.9	135.2	135.8	136.7	138.2	139.1	140.1	.7	3.2
Excluding sales occupations	131.8	132.5	132.8	133.8	134.5	135.3	136.5	137.3	138.3	.7	2.8
Blue-collar occupations	130.2	131.1	131.7	132.8	133.7	134.3	135.0	135.9	136.8	.7	2.3
Durables	131.9	132.6	133.0	134.1	135.0	135.7	136.5	137.4	138.5	.8	2.6
Nondurables	130.0	131.0	131.7	133.0	133.7	134.5	135.9	136.7	137.6	.7	2.9
Service-producing	129.5	130.2	131.6	132.5	133.8	135.3	136.7	137.8	139.6	1.3	4.3
Excluding sales occupations	130.3	130.9	132.2	133.3	134.5	136.1	137.4	138.5	140.0	1.1	4.1
White-collar occupations	130.6	131.1	132.7	133.7	134.9	136.6	138.0	139.3	141.2	1.4	4.7
Excluding sales occupations	132.2	132.6	134.0	135.1	136.3	138.1	139.5	140.6	142.2	1.1	4.3
Blue-collar occupations	126.4	127.3	128.2	129.2	130.0	130.9	132.1	133.2	134.3	.8	3.3
Service occupations	127.1	128.6	129.5	130.6	132.7	133.9	135.0	135.8	137.0	.9	3.2
Transportation and public utilities	129.3	130.4	131.3	131.7	132.9	134.2	135.8	137.1	138.5	1.0	4.2
Transportation	128.2	129.2	130.6	130.9	132.1	133.4	134.0	134.9	136.7	1.3	3.5
Public utilities	130.4	131.7	132.0	132.5	133.7	135.1	137.9	139.7	140.7	.7	5.2
Communications	129.1	131.1	130.2	130.5	131.8	134.0	136.6	139.2	140.5	.9	6.6
Electric, gas, and sanitary services	132.0	132.4	134.2	134.9	136.0	136.4	139.6	140.3	141.0	.5	3.7
Wholesale and retail trade	127.5	128.6	130.1	131.2	132.4	132.9	134.7	135.8	137.6	1.3	3.9
Excluding sales occupations	128.0	129.0	130.4	131.9	133.0	134.0	135.5	136.3	138.1	1.3	3.8
Wholesale trade	129.9	130.9	132.9	133.8	134.6	135.1	137.7	138.6	140.8	1.6	4.6
Excluding sales occupations	130.0	130.9	132.6	133.7	134.5	135.4	137.0	138.2	140.0	1.3	4.1
Retail trade	126.2	127.4	128.5	129.7	131.1	131.7	133.1	134.4	135.9	1.1	3.7
Food stores	127.0	128.4	128.2	128.2	129.8	129.4	131.3	132.9	133.7	.6	3.0
General merchandise stores	124.6	126.3	126.4	127.7	128.6	130.0	131.2	133.0	133.2	.2	3.6

See footnotes at end of table.

21. Continued—Employment Cost Index, compensation,[1] by occupation and industry group

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
Finance, insurance, and real estate	126.7	126.0	128.6	129.4	130.5	134.5	136.7	138.4	141.0	1.9	8.0
Excluding sales occupations	129.7	129.2	131.5	132.4	133.5	137.6	140.2	141.3	143.2	1.3	7.3
Banking, savings and loan, and other credit agencies	130.3	128.0	130.6	131.6	133.1	140.6	143.3	145.3	148.4	2.1	11.5
Insurance	129.3	129.6	131.9	132.1	133.1	134.8	137.4	138.9	141.9	2.2	6.6
Services	132.7	133.4	134.6	135.7	137.0	138.5	139.3	140.3	141.8	1.1	3.5
Business services	130.2	131.8	133.3	134.2	136.3	138.6	139.5	140.7	143.5	2.0	5.3
Health services	134.2	134.5	135.5	135.9	137.0	138.1	138.2	138.7	139.0	.2	1.5
Hospitals	133.4	133.7	134.0	134.4	135.4	136.5	136.7	138.2	139.1	.7	2.7
Educational services	137.5	138.0	138.5	138.8	141.6	142.6	143.4	143.9	147.0	2.2	3.8
Colleges and universities	138.6	139.1	139.5	139.9	142.5	143.7	144.3	144.8	147.8	2.1	3.7
Nonmanufacturing	129.1	129.8	131.1	132.1	133.3	134.7	136.0	137.2	138.9	1.2	4.2
White-collar workers	130.5	131.1	132.7	133.6	134.9	136.5	137.9	139.2	141.1	1.4	4.6
Excluding sales occupations	132.1	132.5	134.0	135.1	136.2	137.9	139.3	140.5	142.0	1.1	4.3
Blue-collar occupations	125.9	126.7	127.5	128.6	129.4	130.1	131.0	132.4	133.4	.8	3.1
Service occupations	127.0	128.6	129.4	130.5	132.7	133.8	134.9	135.7	136.9	.9	3.2
State and local government workers	131.9	132.7	133.2	133.3	135.0	135.7	136.5	136.9	139.0	1.5	3.0
Workers, by occupational group:											
White-collar workers	131.8	132.5	132.9	133.0	134.8	135.5	136.1	136.2	138.4	1.6	2.7
Professional specialty and technical	131.6	132.3	132.5	132.5	134.6	135.1	135.6	135.6	137.7	1.5	2.3
Executive, administrative, and managerial	132.0	132.9	134.1	134.4	135.6	136.4	137.5	137.9	140.4	1.8	3.5
Administrative support, including clerical	131.8	133.0	133.3	133.5	135.3	136.1	136.9	137.2	139.5	1.7	3.1
Blue-collar workers	130.3	131.2	132.1	132.3	133.3	134.2	135.0	135.2	136.8	1.2	2.6
Workers, by industry division:											
Services	132.4	133.1	133.2	133.3	135.4	136.0	136.5	136.6	139.0	1.8	2.7
Services excluding schools[5]	131.9	132.0	132.5	132.9	134.4	135.3	136.1	136.2	138.7	1.8	3.2
Health services	134.0	134.1	134.5	134.9	136.0	137.2	137.9	138.0	140.3	1.7	3.2
Hospitals	134.2	134.3	134.8	135.2	136.3	137.6	138.4	138.4	140.7	1.7	3.2
Educational services	132.3	133.0	133.1	133.2	135.4	135.9	136.3	136.5	138.8	1.7	2.5
Schools	132.6	133.4	133.4	133.5	135.7	136.2	136.6	136.7	139.1	1.8	2.5
Elementary and secondary	132.6	133.1	133.1	133.3	135.5	135.8	136.1	136.2	138.8	1.9	2.4
Colleges and universities	132.5	134.0	134.3	134.1	136.3	137.2	137.9	138.1	140.4	1.4	2.8
Public administration[3]	130.7	131.8	133.0	133.0	134.1	135.1	136.4	137.4	138.9	1.1	3.6

[1] Cost (cents per hour worked) measured in the Employment Cost Index consists of wages, salaries, and employer cost of employee benefits.

[2] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[3] Consists of legislative, judicial, administrative, and regulatory activities.

[4] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[5] Includes, for example, library, social, and health services.

22. Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
Civilian workers[1]	127.2	128.0	129.2	130.1	131.6	132.8	134.0	135.0	136.8	1.3	4.0
Workers, by occupational group:											
White-collar workers	128.6	129.3	130.6	131.5	133.0	134.3	135.6	136.7	138.8	1.5	4.4
Professional specialty and technical	130.2	130.7	131.4	132.3	134.0	135.0	135.8	136.6	138.5	1.4	3.4
Executive, administrative, and managerial	129.0	129.4	131.0	132.0	133.5	135.6	137.4	138.3	140.5	1.6	5.2
Administrative support, including clerical	128.4	129.1	130.4	131.4	132.7	133.7	135.0	136.2	137.5	1.0	3.6
Blue-collar workers	124.5	125.4	126.2	127.5	128.4	129.3	130.4	131.4	132.6	.9	3.3
Service occupations	126.2	127.6	128.6	129.3	131.5	132.6	133.7	134.5	136.1	1.2	3.5
Workers, by industry division:											
Goods-producing	126.1	126.8	127.6	128.9	129.9	130.6	132.0	133.3	134.4	.8	3.5
Manufacturing	127.7	128.4	129.1	130.3	131.3	132.2	133.7	134.6	136.0	1.0	3.6
Service-producing	127.7	128.5	129.8	130.6	132.2	133.6	134.8	135.7	137.8	1.5	4.2
Services	130.3	131.1	132.0	132.9	134.8	136.0	136.9	137.6	139.6	1.5	3.6
Health services	130.8	131.4	132.4	133.1	134.3	135.4	136.2	136.5	137.6	.8	2.5
Hospitals	130.0	130.5	131.0	131.5	132.5	133.6	134.2	135.1	136.4	1.0	2.9
Educational services	131.6	132.3	132.5	132.6	135.3	135.9	136.3	136.5	139.1	1.9	2.8
Public administration[2]	126.6	127.7	128.9	129.0	130.3	131.4	132.7	133.2	134.8	1.2	3.5
Nonmanufacturing	127.0	127.8	129.1	130.0	131.5	132.8	134.0	135.1	137.0	1.4	4.2
Private industry workers	126.5	127.3	128.6	129.7	131.0	132.3	133.7	134.9	136.6	1.3	4.3
Excluding sales occupations	126.8	127.5	128.6	129.9	131.2	132.4	133.7	134.8	136.3	1.1	3.9
Workers, by occupational group:											
White-collar workers	128.0	128.7	130.2	131.3	132.7	134.2	135.7	137.0	139.0	1.5	4.7
Excluding sales occupations	129.0	129.4	130.8	132.0	133.4	134.8	136.3	137.5	139.1	1.2	4.3
Professional specialty and technical occupations	129.6	129.9	131.0	132.4	133.7	134.8	135.9	137.1	138.7	1.2	3.7
Executive, administrative, and managerial occupations	128.9	129.3	131.0	132.1	133.6	135.8	137.8	138.7	140.9	1.6	5.5
Sales occupations	123.9	125.9	127.8	128.3	129.8	131.4	133.1	135.2	138.8	2.7	6.9
Administrative support occupations, including clerical	128.5	129.2	130.6	131.7	132.9	133.9	135.3	136.7	137.9	.9	3.8
Blue-collar workers	124.3	125.1	126.0	127.3	128.3	129.1	130.2	131.3	132.4	.8	3.2
Precision production, craft, and repair occupations	124.2	125.1	125.8	127.4	128.2	128.7	129.8	131.2	132.3	.8	3.2
Machine operators, assemblers, and inspectors	125.4	126.4	127.2	128.5	129.5	130.6	131.6	132.7	133.8	.8	3.3
Transportation and material moving occupations	121.0	121.1	122.3	123.0	124.1	125.1	125.9	126.4	127.6	.9	2.8
Handlers, equipment cleaners, helpers, and laborers	125.8	127.1	128.4	129.3	130.2	131.8	133.2	133.7	135.1	1.0	3.8
Service occupations	124.1	125.7	126.6	127.6	129.9	131.1	132.1	133.0	134.4	1.1	3.5
Production and nonsupervisory occupations[3]	125.6	126.5	127.7	128.8	130.1	131.2	132.3	133.6	135.2	1.2	3.9
Workers, by industry division:											
Goods-producing	126.1	126.8	127.5	128.9	129.9	130.6	132.0	133.2	134.3	.8	3.4
Excluding sales occupations	125.7	126.3	127.0	128.3	129.3	130.0	131.3	132.5	133.6	.8	3.3
White-collar occupations	128.6	129.1	130.0	131.4	132.3	132.9	135.0	136.3	137.4	.8	3.9
Excluding sales occupations	127.7	128.1	128.9	130.0	130.9	131.6	133.3	134.6	135.7	.8	3.7
Blue-collar occupations	124.5	125.3	126.0	127.3	128.4	129.2	130.1	131.3	132.3	.8	3.0
Construction	120.4	120.8	122.0	123.6	124.7	124.9	126.0	128.1	128.5	.3	3.0
Manufacturing	127.7	128.4	129.1	130.3	131.3	132.2	133.7	134.6	136.0	1.0	3.6
White-collar occupations	129.6	130.1	130.6	131.9	132.8	133.6	135.6	136.8	138.3	1.1	4.1
Excluding sales occupations	128.4	128.9	129.3	130.5	131.3	132.2	133.8	135.0	136.3	1.0	3.8
Blue-collar occupations	126.3	127.3	128.0	129.2	130.2	131.2	132.3	133.1	134.3	.9	3.1
Durables	127.7	128.4	129.0	130.1	131.2	131.9	133.4	134.5	135.9	1.0	3.6
Nondurables	127.6	128.5	129.3	130.6	131.4	132.6	134.2	134.9	136.0	.8	3.5
Service-producing	126.7	127.5	129.0	130.1	131.5	133.1	134.4	135.6	137.6	1.5	4.6
Excluding sales occupations	127.6	128.3	129.7	130.9	132.3	133.9	135.2	136.2	137.9	1.2	4.2
White-collar occupations	127.8	128.5	130.1	131.2	132.6	134.3	135.7	137.0	139.2	1.6	5.0
Excluding sales occupations	129.5	129.9	131.5	132.7	134.2	135.9	137.3	138.4	140.2	1.3	4.5
Blue-collar occupations	123.8	124.8	126.0	127.2	127.9	128.9	130.2	131.1	132.4	1.0	3.5
Service occupations	124.0	125.6	126.5	127.5	129.8	131.0	132.1	133.0	134.2	.9	3.4
Transportation and public utilities	125.9	127.0	128.2	128.8	130.1	131.3	132.1	132.8	134.3	1.1	3.2
Transportation	123.8	124.7	126.5	126.9	128.5	129.5	130.1	130.4	132.4	1.5	3.0
Public utilities	128.4	129.8	130.1	130.9	132.0	133.5	134.5	135.7	136.5	.6	3.4
Communications	128.2	130.3	129.8	130.6	131.8	134.0	134.4	135.8	136.7	.7	3.7
Electric, gas, and sanitary services	128.5	129.0	130.4	131.2	132.2	132.9	134.7	135.6	136.3	.5	3.1
Wholesale and retail trade	125.8	127.0	128.5	129.7	130.9	131.6	133.3	134.6	136.6	1.5	4.4
Excluding sales occupations	126.5	127.7	129.3	131.1	132.2	133.2	134.7	135.6	137.6	1.5	4.1
Wholesale trade	128.5	129.6	131.4	132.2	133.0	133.6	136.2	137.1	139.3	1.6	4.7
Excluding sales occupations	128.9	129.8	131.8	132.8	133.9	135.0	136.5	137.8	139.6	1.3	4.3
Retail trade	124.4	125.8	127.1	128.5	129.9	130.6	131.9	133.3	135.2	1.4	4.1
Food stores	123.1	124.7	124.8	124.7	126.7	127.0	129.0	130.5	131.7	.9	3.9
General merchandise stores	122.6	124.7	125.0	126.2	126.7	128.4	129.4	131.5	132.2	.5	4.3

See footnotes at end of table.

22. Continued—Employment Cost Index, wages and salaries, by occupation and industry group

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
Finance, insurance, and real estate	122.2	122.2	124.5	125.3	126.4	130.6	132.6	134.8	138.1	2.4	9.3
Excluding sales occupations	126.0	125.3	127.2	128.1	129.3	133.6	135.9	137.5	139.7	1.6	8.0
Banking, savings and loan, and other credit agencies	126.8	123.8	125.9	126.8	128.9	138.3	140.9	143.2	147.0	2.7	14.0
Insurance	125.4	126.0	127.9	128.0	128.7	130.2	133.1	134.8	138.7	2.9	7.8
Services	129.7	130.5	131.8	133.0	134.7	136.2	137.2	138.3	140.0	1.2	3.9
Business services	128.5	130.1	131.4	132.4	134.9	137.3	137.6	139.2	141.8	1.9	5.1
Health services	130.8	131.4	132.5	133.2	134.3	135.4	136.2	136.5	137.5	.7	2.4
Hospitals	129.7	130.3	130.7	131.2	132.2	133.2	133.6	134.7	135.8	.8	2.7
Educational services	133.3	133.8	134.5	134.8	137.8	138.4	139.1	139.6	142.8	2.3	3.6
Colleges and universities	133.4	133.8	134.6	135.0	137.8	138.7	139.1	139.7	142.8	2.2	3.6
Nonmanufacturing	125.9	126.8	128.2	129.3	130.7	132.1	133.4	134.7	136.5	1.3	4.4
White-collar workers	127.6	128.3	129.9	131.0	132.4	134.1	135.5	136.8	138.9	1.5	4.9
Excluding sales occupations	129.2	129.6	131.2	132.4	133.8	135.5	136.9	138.1	139.8	1.2	4.5
Blue-collar occupations	122.4	123.1	124.1	125.5	126.4	127.1	128.2	129.5	130.5	.8	3.2
Service occupations	123.9	125.5	126.4	127.4	129.7	130.9	132.0	132.9	134.1	.9	3.4
State and local government workers	130.1	130.9	131.4	131.5	133.6	134.4	135.1	135.4	137.6	1.6	3.0
Workers, by occupational group:											
White-collar workers	130.3	131.1	131.4	131.5	133.7	134.5	135.0	135.2	137.6	1.8	2.9
Professional specialty and technical	131.1	131.7	131.9	132.0	134.4	135.1	135.5	135.6	137.9	1.7	2.6
Executive, administrative, and managerial	129.3	130.2	131.3	131.7	133.1	134.1	135.1	135.6	138.0	1.8	3.7
Administrative support, including clerical	127.7	129.0	129.2	129.5	131.4	132.3	133.0	133.3	135.4	1.6	3.0
Blue-collar workers	127.9	128.8	129.6	129.8	131.2	132.3	133.1	133.5	135.1	1.2	3.0
Workers, by industry division:											
Services	131.2	131.9	132.1	132.2	134.7	135.3	135.7	135.9	138.4	1.8	2.7
Services excluding schools[4]	130.1	130.5	131.2	131.6	133.3	134.4	135.4	135.5	137.8	1.7	3.4
Health services	131.1	131.4	132.1	132.6	133.9	135.3	136.3	136.5	138.7	1.6	3.6
Hospitals	130.9	131.3	131.9	132.4	133.7	135.2	136.3	136.5	138.6	1.5	3.7
Educational services	131.3	132.0	132.1	132.2	134.8	135.3	135.7	135.8	138.4	1.9	2.7
Schools	131.4	132.2	132.2	132.3	134.9	135.5	135.8	136.0	138.5	1.8	2.7
Elementary and secondary	132.0	132.4	132.4	132.6	135.3	135.7	136.0	136.1	138.7	1.9	2.5
Colleges and universities	129.8	131.2	131.5	131.4	133.6	134.6	135.2	135.5	137.7	1.6	3.1
Public administration[2]	126.6	127.7	128.9	129.0	130.3	131.4	132.7	133.2	134.8	1.2	3.5

[1] Consists of private industry workers (excluding farm and household workers) and State and local government (excluding Federal Government) workers.

[2] Consists of legislative, judicial, administrative, and regulatory activities.

[3] This series has the same industry and occupational coverage as the Hourly Earnings index, which was discontinued in January 1989.

[4] Includes, for example, library, social, and health services.

23. Employment Cost Index, benefits, private industry workers by occupation and industry group

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
Private industry workers	138.1	138.6	139.4	140.1	140.8	141.8	142.6	143.7	144.5	0.6	2.6
Workers, by occupational group:											
White-collar workers	139.5	139.7	140.8	141.5	142.0	143.4	144.7	145.6	146.6	.7	3.2
Blue-collar workers	136.2	137.0	137.2	138.0	138.8	139.0	139.1	140.4	141.0	.4	1.6
Workers, by industry division:											
Goods-producing	138.8	139.7	139.9	140.9	141.5	141.5	141.5	142.5	143.0	.4	1.1
Service-producing	137.2	137.4	138.5	139.2	139.8	141.4	142.7	143.8	144.9	.8	3.6
Manufacturing	138.8	139.8	139.9	141.0	141.4	141.7	141.7	142.4	142.6	.1	.8
Nonmanufacturing	137.5	137.9	138.9	139.5	140.2	141.5	142.7	143.9	145.0	.8	3.4

24. Employment Cost Index, private nonfarm workers by bargaining status, region, and area size

[June 1989 = 100]

Series	1996		1997				1998			Percent change	
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.	3 months ended	12 months ended
										Sept. 1998	
COMPENSATION											
Workers, by bargaining status[1]											
Union	130.1	130.8	131.0	131.8	133.2	133.5	134.0	135.3	136.8	1.1	2.7
Goods-producing	129.2	129.8	130.0	131.2	132.3	132.5	132.7	134.3	135.6	1.0	2.5
Service-producing	131.0	131.7	131.9	132.4	134.0	134.5	135.3	136.2	138.0	1.3	3.0
Manufacturing	129.8	130.6	130.8	131.7	133.0	133.3	133.6	134.6	136.0	1.0	2.3
Nonmanufacturing	129.9	130.4	130.6	131.5	132.9	133.2	133.9	135.3	136.9	1.2	3.0
Nonunion	129.7	130.4	131.8	132.8	133.9	135.3	136.7	137.8	139.3	1.1	4.0
Goods-producing	130.4	131.3	132.0	133.2	134.0	134.7	135.9	136.9	137.7	.6	2.8
Service-producing	129.2	129.9	131.5	132.5	133.7	135.3	136.7	138.0	139.7	1.2	4.5
Manufacturing	131.7	132.5	133.1	134.4	135.1	135.9	137.2	138.0	138.9	.7	2.8
Nonmanufacturing	128.9	129.6	131.1	132.2	133.4	134.9	136.3	137.5	139.1	1.2	4.3
Workers, by region[1]											
Northeast	130.6	131.1	132.2	133.1	134.0	135.0	136.0	137.0	138.7	1.2	3.5
South	128.8	129.7	130.8	131.5	132.5	134.6	135.5	136.4	137.6	.9	3.8
Midwest (formerly North Central)	131.3	132.1	133.3	134.7	136.2	136.9	138.3	139.6	140.9	.9	3.5
West	128.3	128.9	130.3	131.4	132.5	133.4	135.2	136.6	138.5	1.4	4.5
Workers, by area size[1]											
Metropolitan areas	130.0	130.6	131.7	132.8	133.9	135.1	136.4	137.5	139.1	1.2	3.9
Other areas	128.7	130.2	131.4	132.4	133.8	135.3	135.9	137.1	138.2	.8	3.3
WAGES AND SALARIES											
Workers, by bargaining status[1]											
Union	124.8	125.4	126.0	126.9	128.3	128.9	129.6	130.7	132.4	1.3	3.2
Goods-producing	123.2	123.6	124.1	125.4	126.6	127.1	127.9	129.4	131.0	1.2	3.5
Service-producing	126.8	127.6	128.2	128.8	130.4	131.2	131.8	132.2	134.1	1.4	2.8
Manufacturing	124.5	125.2	125.6	126.5	127.8	128.6	129.6	130.4	132.2	1.4	3.4
Nonmanufacturing	124.9	125.5	126.1	127.1	128.6	129.1	129.6	130.8	132.4	1.2	3.0
Nonunion	126.9	127.7	129.1	130.3	131.6	133.0	134.5	135.7	137.4	1.3	4.4
Goods-producing	127.3	128.0	128.9	130.2	131.2	132.0	133.6	134.7	135.7	.7	3.4
Service-producing	126.6	127.5	129.1	130.2	131.6	133.2	134.6	135.9	137.9	1.5	4.8
Manufacturing	128.8	129.6	130.3	131.7	132.6	133.5	135.1	136.2	137.3	.8	3.5
Nonmanufacturing	126.1	127.0	128.5	129.7	131.1	132.6	134.0	135.3	137.1	1.3	4.6
Workers, by region[1]											
Northeast	127.0	127.7	128.8	129.8	130.7	131.6	132.6	133.8	135.4	1.2	3.6
South	126.0	127.0	128.5	129.4	130.6	133.0	134.0	134.9	136.5	1.2	4.5
Midwest (formerly North Central)	126.9	127.7	129.0	130.4	132.2	133.0	134.7	136.0	137.5	1.1	4.0
West	125.8	126.5	127.7	128.9	130.2	131.2	132.9	134.5	136.7	1.6	5.0
Workers, by area size[1]											
Metropolitan areas	126.7	127.4	128.7	129.9	131.1	132.3	133.8	135.1	136.9	1.3	4.4
Other areas	125.0	126.5	127.7	128.8	130.4	132.0	132.5	133.4	134.7	1.0	3.3

[1] The indexes are calculated differently from those for the occupation and industry groups. For a detailed description of the index calculation, see the *Monthly Labor Review* Technical Note, "Estimation procedures for the Employment Cost Index," May 1982.

25. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, medium and large private establishments, selected years, 1980–93

Item	1980	1982	1984	1986	1988	1989	1991	1993
Scope of survey (in 000's)	21,352	21,043	21,013	21,303	31,059	32,428	31,163	28,728
Number of employees (in 000's):								
With medical care	20,711	20,412	20,383	20,238	27,953	29,834	25,865	23,519
With life insurance	20,498	20,201	20,172	20,451	28,574	30,482	29,293	26,175
With defined benefit plan	17,936	17,676	17,231	16,190	19,567	20,430	18,386	16,015
Time-off plans								
Participants with:								
Paid lunch time	10	9	9	10	11	10	8	9
Average minutes per day	–	25	26	27	29	26	30	29
Paid rest time	75	76	73	72	72	71	67	68
Average minutes per day	–	25	26	26	26	26	28	26
Paid funeral leave	–	–	–	88	85	84	80	83
Average days per occurrence	–	–	–	3.2	3.2	3.3	3.3	3.0
Paid holidays	99	99	99	99	96	97	92	91
Average days per year	10.1	10.0	9.8	10.0	9.4	9.2	10.2	9.4
Paid personal leave	20	24	23	25	24	22	21	21
Average days per year	–	3.8	3.6	3.7	3.3	3.1	3.3	3.1
Paid vacations	100	99	99	100	98	97	96	97
Paid sick leave	62	67	67	70	69	68	67	65
Unpaid maternity leave	–	–	–	–	33	37	37	60
Unpaid paternity leave	–	–	–	–	16	18	26	53
Insurance plans								
Participants in medical care plans	97	97	97	95	90	92	83	82
Percent of participants with coverage for:								
Home health care	–	–	46	66	76	75	81	86
Extended care facilities	58	62	62	70	79	80	80	82
Physical exam	–	–	8	18	28	28	30	42
Percent of participants with employee contribution required for:								
Self coverage	26	27	36	43	44	47	51	61
Average monthly contribution	–	–	$11.93	$12.80	$19.29	$25.31	$26.60	$31.55
Family coverage	46	51	58	63	64	66	69	76
Average monthly contribution	–	–	$35.93	$41.40	$60.07	$72.10	$96.97	$107.42
Participants in life insurance plans	96	96	96	96	92	94	94	91
Percent of participants with:								
Accidental death and dismemberment insurance	69	72	74	72	78	71	71	76
Survivor income benefits	–	–	–	10	8	7	6	5
Retiree protection available	–	64	64	59	49	42	44	41
Participants in long-term disability insurance plans	40	43	47	48	42	45	40	41
Participants in sickness and accident insurance plans	54	51	51	49	46	43	45	44
Retirement plans								
Participants in defined benefit pension plans	84	84	82	76	63	63	59	56
Percent of participants with:								
Normal retirement prior to age 65	55	58	63	64	59	62	55	52
Early retirement available	98	97	97	98	98	97	98	95
Ad hoc pension increase in last 5 years	–	–	47	35	26	22	7	6
Terminal earnings formula	53	52	54	57	55	64	56	61
Benefit coordinated with Social Security	45	45	56	62	62	63	54	48
Participants in defined contribution plans	–	–	–	60	45	48	48	49
Participants in plans with tax-deferred savings arrangements	–	–	–	33	36	41	44	43
Other benefits								
Employees eligible for:								
Flexible benefits plans	–	–	–	2	5	9	10	12
Reimbursement accounts	–	–	–	5	12	23	36	52

NOTE: Dash indicates data not available.

26. Percent of full-time employees participating in employer-provided benefit plans, and in selected features within plans, small private establishments and State and local governments, 1987, 1990, 1992, and 1994

Item	Small private establishments			State and local governments			
	1990	1992	1994	1987	1990	1992	1994
Scope of survey (in 000's)	32,466	34,360	35,910	10,321	12,972	12,466	12,907
Number of employees (in 000's):							
With medical care	22,402	24,396	23,536	9,599	12,064	11,219	11,192
With life insurance	20,778	21,990	21,955	8,773	11,415	11,095	11,194
With defined benefit plan	6,493	7,559	5,480	9,599	11,675	10,845	11,708
Time-off plans							
Participants with:							
Paid lunch time	8	9	–	17	11	10	–
Average minutes per day	37	37	–	34	36	34	–
Paid rest time	48	49	–	58	56	53	–
Average minutes per day	27	26	–	29	29	29	–
Paid funeral leave	47	50	50	56	63	65	62
Average days per occurrence	2.9	3.0	3.1	3.7	3.7	3.7	3.7
Paid holidays	84	82	82	81	74	75	73
Average days per year[1]	9.5	9.2	7.5	10.9	13.6	14.2	11.5
Paid personal leave	11	12	13	38	39	38	38
Average days per year	2.8	2.6	2.6	2.7	2.9	2.9	3.0
Paid vacations	88	88	88	72	67	67	66
Paid sick leave	47	53	50	97	95	95	94
Unpaid leave	17	18	–	57	51	59	–
Unpaid paternity leave	8	7	–	30	33	44	–
Unpaid family leave	–	–	47	–	–	–	93
Insurance plans							
Participants in medical care plans	69	71	66	93	93	90	87
Percent of participants with coverage for:							
Home health care	79	80	–	76	82	87	84
Extended care facilities	83	84	–	78	79	84	81
Physical exam	26	28	–	36	36	47	55
Percent of participants with employee contribution required for:							
Self coverage	42	47	52	35	38	43	47
Average monthly contribution	$25.13	$36.51	$40.97	$15.74	$25.53	$28.97	$30.20
Family coverage	67	73	76	71	65	72	71
Average industry contribution	$109.34	$150.54	$159.63	$71.89	$117.59	$139.23	$149.70
Participants in life insurance plans	64	64	61	85	88	89	87
Percent of participants with:							
Accidental death and dismemberment insurance	78	76	79	67	67	74	64
Survivor income benefits	1	1	2	1	1	1	2
Retiree protection available	19	25	20	55	45	46	46
Participants in long-term disability insurance plans	19	23	20	31	27	28	30
Participants in sickness and accident insurance plans	6	26	26	14	21	22	21
Retirement plans							
Participants in defined benefit pension plans	20	22	15	93	90	87	91
Percent of participants with:							
Normal retirement prior to age 65	54	50	–	92	89	92	92
Early retirement available	95	95	–	90	88	89	87
Ad hoc pension increase in last 5 years	7	4	–	33	16	10	13
Terminal earnings formula	58	54	–	100	100	100	99
Benefit coordinated with Social Security	49	46	–	18	8	10	49
Participants in defined contribution plans	31	33	34	9	9	9	9
Participants in plans with tax-deferred savings arrangements	17	24	23	28	45	45	24
Other benefits							
Employees eligible for:							
Flexible benefits plans	1	2	3	5	5	5	5
Reimbursement accounts	8	14	19	5	31	50	64

[1] Methods used to calculate the average number of paid holidays were revised in 1994 to count partial days more precisely. Average holidays for 1994 are not comparable with those reported in 1990 and 1992.

NOTE: Dash indicates data not available.

27. Work stoppages involving 1,000 workers or more

Measure	Annual totals		1997						1998						
	1996	1997	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.[p]	Feb.[p]	Mar.[p]	Apr.[p]	May.[p]	June[p]	July[p]
Number of stoppages:															
Beginning in period	37	29	3	2	6	3	1	0	1	3	1	0	4	4	1
In effect during period	38	38	5	3	6	5	3	2	1	3	2	0	4	6	4
Workers involved:															
Beginning in period (in thousands)	273	339	30.8	184.5	30.3	4.4	8.9	.0	8.0	10.8	1.0	.0	6.1	162.9	2.5
In effect during period (in thousands)	275	351	41.5	189.3	30.3	8.6	11.1	2.2	8.0	10.8	2.1	.0	6.1	165.4	160.1
Days idle:															
Number (in thousands)	4,889	4,497	247.1	2,075.4	128.4	64.0	48.5	43.8	16.0	38.6	21.5	0.0	72.7	1,542.9	2,007.2
Percent of estimated working time[1]	.02	.01	.01	.08	.00	.00	.00	.00	(2)	.00	.00	.00	.00	.05	.06

[1] Agricultural and government employees are included in the total employed and total working time; private household, forestry, and fishery employees are excluded. An explanation of the measurement of idleness as a percentage of the total time worked is found in " 'Total economy' measures of strike idleness," *Monthly Labor Review*, October 1968, pp. 54–56.

[2] Less than 0.005.

[p] = preliminary.

28. Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
CONSUMER PRICE INDEX FOR ALL URBAN CONSUMERS															
All items	156.9	160.5	161.6	161.5	161.3	161.6	161.9	162.2	162.5	162.8	163.0	163.2	163.4	163.6	164.0
Food and beverages	153.7	157.7	158.7	158.9	159.1	160.3	159.8	160.1	160.2	160.7	160.6	160.9	161.4	161.5	162.4
Food	153.3	157.3	158.2	158.5	158.7	159.9	159.4	159.7	159.8	160.3	160.1	160.5	161.0	161.1	162.0
Food at home	154.3	158.1	159.0	159.1	159.2	161.0	160.0	160.2	160.2	160.7	160.5	160.8	161.4	161.2	162.5
Cereals and bakery products	174.0	177.6	178.4	178.0	178.4	179.0	179.7	179.6	180.2	180.5	181.6	181.8	182.7	181.9	182.2
Meats, poultry, fish, and eggs	144.8	148.5	148.9	149.3	148.4	148.3	147.5	147.2	146.3	146.2	146.3	146.9	148.2	147.5	148.0
Dairy and related products[1]	142.1	145.5	145.7	147.0	147.8	148.3	147.7	148.4	148.5	148.1	148.1	148.2	150.5	152.9	155.0
Fruits and vegetables	183.9	187.5	188.5	189.5	191.3	202.1	193.8	196.1	197.5	203.9	198.1	198.2	195.9	193.5	199.5
Nonalcoholic beverages and beverage materials	128.6	133.4	136.6	134.7	133.1	134.1	134.8	134.2	133.9	132.9	132.8	132.3	132.0	132.2	132.6
Other foods at home	142.9	147.3	149.0	147.7	147.7	148.7	149.1	149.5	149.6	149.3	150.4	151.1	152.1	152.2	152.7
Sugar and sweets	143.7	147.8	148.2	147.4	147.9	150.3	149.6	150.8	150.1	149.5	150.5	149.9	150.2	150.8	150.5
Fats and oils	140.5	141.7	141.7	140.4	140.3	140.5	141.5	142.2	140.7	141.2	143.3	147.6	149.7	152.4	156.8
Other foods	156.2	161.2	162.5	161.5	162.8	163.6	164.2	164.3	165.0	164.7	165.6	165.9	166.9	166.3	166.0
Other miscellaneous foods[1,2]	–	–	–	–	100.0	100.4	100.4	101.5	101.7	101.4	102.5	102.6	103.5	103.6	103.5
Food away from home[1]	152.7	157.0	158.2	158.6	159.0	159.2	159.6	159.9	160.2	160.6	160.7	161.1	161.5	162.1	162.3
Other food away from home[1,2]	–	–	–	–	100.0	100.1	100.4	100.3	100.6	100.6	101.0	101.6	102.3	102.7	102.7
Alcoholic beverages	158.5	162.8	163.7	163.7	164.0	164.6	165.0	165.1	165.2	165.2	165.5	165.6	165.7	166.3	166.6
Housing	152.8	156.8	157.7	157.7	157.7	158.3	158.8	159.2	159.5	159.7	160.6	161.2	161.5	161.5	161.4
Shelter	171.0	176.3	177.8	177.7	178.1	179.2	180.1	180.8	181.0	181.2	181.8	182.6	183.3	183.4	183.9
Rent of primary residence	162.0	166.7	168.2	168.7	169.1	169.5	169.9	170.3	170.7	171.1	171.7	172.2	172.8	173.4	173.9
Lodging away from home[2]	–	–	–	–	100.0	105.1	109.3	111.2	110.2	108.7	109.6	111.7	112.9	109.8	109.5
Owners' equivalent rent of primary residence[3]	176.8	181.9	183.6	184.2	184.7	185.1	185.5	185.9	186.4	186.8	187.4	188.0	188.5	189.2	189.8
Tenants' and household insurance[1,2]	–	–	–	–	100.0	100.3	100.2	100.3	100.4	99.6	99.1	99.3	99.2	99.2	99.7
Fuels and utilities	127.5	130.8	130.8	131.1	130.0	128.8	127.4	127.1	127.0	127.9	131.2	131.3	130.6	130.0	127.1
Fuels	115.2	117.9	117.4	117.7	115.8	114.5	112.8	112.5	112.3	113.2	116.8	116.8	115.9	115.2	112.0
Fuel oil and other fuels	99.2	99.8	95.3	96.6	97.2	96.4	95.2	94.4	92.8	91.8	89.5	87.8	86.7	85.9	86.4
Gas (piped) and electricity	122.1	125.1	125.1	125.3	123.0	121.6	119.7	119.4	119.4	120.5	124.7	124.9	124.0	123.3	119.6
Household furnishings and operations	124.7	125.4	125.4	125.2	125.1	125.6	126.1	126.3	127.0	126.6	126.7	127.2	126.8	126.5	126.6
Apparel	131.7	132.9	134.9	134.7	131.6	129.8	131.9	134.9	135.8	135.3	132.5	129.6	131.6	133.6	135.6
Men's and boys' apparel	127.7	130.1	133.1	133.0	131.2	129.8	130.8	133.6	133.4	133.5	131.0	129.4	130.6	131.1	134.1
Women's and girls' apparel	124.7	126.1	128.3	128.8	123.6	120.2	124.3	129.9	130.9	129.7	125.8	120.6	123.8	127.8	128.8
Infants' and toddlers' apparel[1]	129.7	129.0	126.2	126.0	125.8	124.8	123.1	124.4	126.6	126.9	124.7	122.0	124.4	124.9	130.2
Footwear	126.6	127.6	130.6	129.3	128.2	127.4	126.6	126.5	127.9	128.3	128.2	127.0	127.7	128.6	130.3
Transportation	143.0	144.3	144.5	143.9	143.2	142.7	142.1	141.4	141.5	142.0	141.7	141.8	141.2	140.7	141.3
Private transportation	140.0	141.0	140.9	140.6	140.0	139.3	138.4	137.5	137.7	138.4	138.2	138.0	137.4	137.0	137.7
New and used motor vehicles[2]	–	–	99.6	99.9	100.0	100.2	100.2	100.1	100.1	99.9	99.7	99.9	99.9	99.8	100.1
New vehicles	143.7	144.3	143.3	144.0	144.1	144.4	144.4	144.4	144.3	143.3	142.6	142.7	142.8	142.3	142.5
Used cars and trucks[1]	157.0	151.1	147.9	147.6	147.9	148.1	148.4	147.3	148.2	150.0	150.9	151.3	151.1	151.9	153.0
Motor fuel	106.3	106.2	106.7	104.6	101.9	97.8	94.1	90.9	91.7	94.7	94.8	93.7	91.6	90.0	90.8
Gasoline (all types)	105.9	105.8	106.5	104.1	101.3	97.2	93.5	90.3	91.1	94.2	94.3	93.2	91.1	89.5	90.3
Motor vehicle parts and equipment	102.2	101.9	101.4	101.6	101.4	101.3	101.4	101.2	100.5	100.6	101.0	101.1	101.2	101.2	101.4
Motor vehicle maintenance and repair	158.4	162.7	163.9	164.0	164.7	165.0	165.5	165.7	165.7	165.9	166.5	166.8	167.3	168.3	169.0
Public transportation	181.9	186.7	190.9	185.9	184.3	187.1	191.2	193.7	193.4	190.4	188.2	192.0	192.2	190.2	189.9
Medical care	228.2	234.6	235.8	236.4	237.1	238.1	239.3	239.8	240.7	241.4	242.0	242.7	243.5	243.9	244.3
Medical care commodities	210.4	215.3	215.6	215.8	216.8	217.6	218.4	218.5	220.2	221.5	222.1	222.2	223.1	224.0	224.2
Medical care services	232.4	239.1	240.5	241.2	241.8	242.9	244.2	244.8	245.4	245.9	246.5	247.4	248.2	248.4	249.0
Professional services	208.3	215.4	216.8	217.1	217.5	218.5	219.7	220.4	221.1	221.7	222.5	222.8	223.3	223.7	224.2
Hospital and related services	269.5	278.4	280.2	281.3	282.5	283.5	285.2	285.2	285.6	285.6	285.8	288.2	289.5	289.2	290.2
Recreation[2]	–	–	100.0	100.0	100.0	100.3	100.7	101.0	101.1	101.0	101.2	101.1	101.3	101.3	101.1
Video and audio[1,2]	–	–	99.9	100.3	100.0	100.6	101.2	101.4	101.4	101.2	101.2	101.1	101.2	101.4	101.1
Education and communication[2]	–	–	99.9	100.0	100.0	99.9	99.8	99.9	99.9	100.1	100.1	100.0	100.1	100.9	101.0
Education[2]	–	–	99.9	99.9	100.0	100.3	100.4	100.5	100.7	100.9	100.8	101.0	102.6	104.3	104.5
Educational books and supplies	226.9	238.4	242.4	242.4	242.8	245.1	246.9	247.5	248.8	248.9	248.6	249.0	249.1	253.7	257.0
Tuition, other school fees, and child care	267.1	280.4	288.3	288.5	289.2	289.2	289.2	289.5	290.0	290.5	290.4	291.1	295.8	300.9	301.2
Communication[1,2]	–	–	100.0	100.1	100.0	99.6	99.2	99.3	99.3	99.4	99.4	99.1	97.9	97.9	97.8
Information and information processing[1,2]	–	–	100.0	100.1	100.0	99.6	99.1	99.3	99.2	99.3	99.3	99.0	97.7	97.7	97.6
Telephone services[1,2]	–	–	–	–	100.0	99.9	100.0	100.4	100.5	101.1	101.4	101.5	100.4	100.7	100.7
Information and information processing other than telephone services[1,4]	57.2	50.1	48.9	47.6	47.4	46.2	44.3	43.4	42.8	41.5	40.8	39.1	37.6	36.7	36.1
Personal computers and peripheral equipment[1,2]	–	–	–	–	100.0	96.9	91.3	88.7	86.6	82.7	80.0	75.2	71.1	68.5	67.5
Other goods and services	215.4	224.8	229.4	229.9	230.1	231.3	233.1	232.4	234.7	236.7	236.4	237.8	238.0	240.4	241.3
Tobacco and smoking products	232.8	243.7	250.2	250.7	251.2	253.8	261.2	254.1	263.5	270.0	266.9	273.2	273.7	283.5	284.9
Personal care[1]	150.1	152.7	153.3	154.3	154.0	154.6	155.0	155.5	155.9	156.6	156.8	157.0	157.1	157.5	158.1
Personal care products[1]	144.3	144.2	144.5	146.1	145.3	146.1	146.7	147.3	147.3	149.3	149.2	149.1	148.5	149.1	149.4
Personal care services[1]	156.6	162.4	163.4	163.5	163.9	164.3	164.3	164.7	165.2	165.4	165.3	166.1	166.6	167.1	167.5
Miscellaneous personal services	215.6	226.1	228.9	229.5	230.0	230.9	232.1	232.8	233.5	234.0	234.7	235.1	235.7	236.2	236.9

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Commodity and service group:															
Commodities	139.9	141.8	142.4	142.3	141.7	141.6	141.5	141.5	142.0	142.3	141.8	141.6	141.7	141.8	142.6
Food and beverages	153.7	157.7	158.7	158.9	159.1	160.3	159.8	160.1	160.2	160.7	160.6	160.9	161.4	161.5	162.4
Commodities less food and beverages	131.5	132.2	132.5	132.2	131.2	130.5	130.5	130.4	131.0	131.3	130.6	130.1	130.0	130.2	130.8
Nondurables less food and beverages	133.0	134.6	135.8	135.3	133.5	132.0	132.1	132.1	133.0	134.0	133.0	131.8	131.9	132.6	133.6
Apparel	131.7	132.9	134.9	134.7	131.6	129.8	131.9	134.9	135.8	135.3	132.5	129.6	131.6	133.6	135.6
Nondurables less food, beverages, and apparel	138.6	140.6	141.3	140.6	139.5	138.1	137.2	135.6	136.6	138.4	138.2	138.0	137.1	137.1	137.6
Durables	129.4	128.7	127.8	127.9	128.0	128.2	128.2	128.0	128.1	127.6	127.4	127.5	127.2	126.8	126.9
Services	174.1	179.4	181.0	181.0	181.0	181.8	182.4	182.9	183.2	183.4	184.2	184.9	185.3	185.5	185.5
Rent of shelter[3]	178.0	183.4	185.0	185.0	185.3	186.5	187.5	188.1	188.4	188.6	189.3	190.1	190.8	191.0	191.5
Transporatation services	180.5	185.0	186.9	186.2	186.0	187.1	187.9	188.4	188.3	187.8	187.1	187.8	187.8	187.3	188.2
Other services	201.4	209.6	212.7	212.7	213.1	213.7	214.4	215.1	215.6	216.1	216.6	216.9	217.6	219.0	219.0
Special indexes:															
All items less food	157.5	161.1	162.2	162.1	161.8	161.9	162.3	162.6	163.0	163.3	163.5	163.6	163.9	164.1	164.4
All items less shelter	152.8	155.9	156.9	156.8	156.4	156.4	156.4	156.5	156.9	157.3	157.3	157.3	157.4	157.6	157.9
All items less medical care	152.8	156.3	157.4	157.3	157.0	157.3	157.5	157.8	158.1	158.4	158.6	158.7	159.0	159.2	159.5
Commodities less food	132.6	133.4	133.8	133.5	132.6	131.9	131.9	131.8	132.4	132.7	132.1	131.5	131.4	131.6	132.3
Nondurables less food	134.5	136.3	137.4	137.0	135.3	133.9	134.1	134.1	135.0	135.9	134.9	133.8	133.9	134.6	135.6
Nondurables less food and apparel	139.5	141.8	142.5	141.9	141.0	139.8	138.9	137.5	138.4	140.1	139.9	139.7	138.9	138.9	139.5
Nondurables	143.5	146.4	147.4	147.3	146.5	146.2	146.1	146.2	146.7	147.5	146.9	146.4	146.8	147.1	148.1
Services less rent of shelter[3]	182.5	188.1	189.8	189.8	189.5	189.9	190.1	190.6	190.8	191.1	192.1	192.6	192.7	193.0	192.6
Services less medical care services	168.7	173.9	175.5	175.4	175.4	176.1	176.6	177.2	177.4	177.6	178.4	179.0	179.5	179.6	179.7
Energy	110.1	111.5	111.5	110.7	108.4	105.9	103.2	101.6	101.9	103.8	105.7	105.2	103.8	102.7	101.3
All items less energy	163.1	167.1	168.3	168.3	168.3	169.0	169.6	170.1	170.4	170.5	170.5	170.8	171.2	171.6	172.2
All items less food and energy	165.6	169.5	170.8	170.8	170.7	171.2	172.1	172.6	173.0	173.1	173.0	173.3	173.8	174.2	174.7
Commodities less food and energy	141.3	142.3	142.7	142.8	142.1	142.0	142.7	143.1	143.8	143.6	142.8	142.4	142.7	143.2	143.8
Energy commodities	105.7	105.7	105.7	103.9	101.6	97.8	94.3	91.3	91.8	94.6	94.5	93.3	91.3	89.8	90.5
Services less energy	179.4	185.0	186.7	186.7	186.9	187.9	188.8	189.4	189.7	189.8	190.3	190.9	191.5	191.8	192.3
CONSUMER PRICE INDEX FOR URBAN WAGE EARNERS AND CLERICAL WORKERS															
All items	154.1	157.6	158.5	158.5	158.2	158.4	158.5	158.7	159.1	159.5	159.7	159.8	160.0	160.2	160.6
Food and beverages	153.2	157.2	158.1	158.3	158.5	159.6	159.2	159.4	159.5	159.9	159.9	160.2	160.7	160.8	161.6
Food	152.8	156.8	157.7	157.9	158.1	159.3	158.8	159.1	159.1	159.6	159.5	159.8	160.4	160.4	161.3
Food at home	153.5	157.2	158.0	158.1	158.2	159.9	158.9	159.2	159.1	159.6	159.4	159.7	160.4	160.2	161.3
Cereals and bakery products	173.6	177.3	178.0	177.8	178.1	178.8	179.4	179.3	179.9	180.3	181.4	181.6	182.5	181.8	181.9
Meats, poultry, fish, and eggs	144.5	148.2	148.5	149.0	148.0	148.0	147.2	146.9	146.0	145.8	145.9	146.6	147.9	147.1	147.5
Dairy and related products[1]	141.9	145.2	145.5	146.8	147.5	147.9	147.4	148.1	148.2	147.8	147.7	147.8	150.1	152.6	154.6
Fruits and vegetables	183.1	186.6	187.7	188.4	190.0	200.9	192.4	194.8	196.3	202.8	197.1	197.3	194.9	192.5	198.4
Nonalcoholic beverages and beverage materials	128.1	132.3	135.2	133.3	131.7	132.9	133.6	133.1	132.7	131.6	131.6	131.2	130.7	130.9	131.3
Other foods at home	142.6	146.8	148.4	147.0	147.1	148.1	148.5	148.9	148.9	148.7	149.8	150.5	151.5	151.7	151.9
Sugar and sweets	143.6	147.7	148.0	147.3	147.7	150.2	149.5	151.0	150.0	149.4	150.5	149.9	150.3	150.6	150.2
Fats and oils	140.3	141.4	141.4	140.2	140.0	140.4	141.4	141.9	140.4	141.1	143.1	147.3	149.3	151.9	156.1
Other foods	156.0	161.1	162.3	161.3	162.7	163.6	164.1	164.3	165.0	164.6	165.5	165.9	166.8	166.3	165.7
Other miscellaneous foods[1,2]	–	–	–	–	100.0	100.5	100.5	101.8	101.7	101.5	102.5	102.8	103.5	103.7	103.3
Food away from home[1]	152.6	157.0	158.2	158.6	159.0	159.3	159.6	159.9	160.2	160.6	160.8	161.1	161.4	162.0	162.3
Other food away from home[1,2]	–	–	–	–	100.0	100.1	100.3	100.3	100.6	100.6	101.0	101.5	102.2	102.8	102.8
Alcoholic beverages	157.9	162.1	162.8	162.8	163.1	163.6	163.9	164.0	164.2	164.1	164.3	164.5	164.6	165.1	165.4
Housing	149.6	153.4	154.4	154.5	154.4	154.8	155.1	155.5	155.8	156.1	157.0	157.6	157.7	157.8	157.6
Shelter	166.2	171.2	172.7	172.8	173.1	173.9	174.6	175.2	175.5	175.7	176.4	177.0	177.6	177.9	178.4
Rent of primary residence	161.6	166.3	167.9	168.4	168.8	169.2	169.6	170.0	170.3	170.8	171.3	171.8	172.4	173.0	173.5
Lodging away from home[2]	–	–	–	–	100.0	104.8	108.6	110.8	110.3	108.6	110.0	111.9	112.8	109.8	109.7
Owners' equivalent rent of primary residence[3]	161.2	165.8	167.4	167.9	168.3	168.7	169.1	169.5	169.9	170.2	170.8	171.2	171.8	172.4	172.9
Tenants' and household insurance[1,2]	–	–	–	–	100.0	100.4	100.2	100.5	100.5	99.7	99.3	99.4	99.4	99.4	100.0
Fuels and utilities	127.2	130.5	130.6	130.9	129.7	128.6	127.1	126.9	126.9	127.9	131.3	131.5	130.6	130.0	126.9
Fuels	114.7	117.3	116.8	117.3	115.2	113.9	112.2	111.9	111.8	112.9	116.5	116.6	115.6	114.9	111.6
Fuel oil and other fuels	99.0	99.6	95.0	96.4	97.0	96.2	95.1	94.5	93.1	92.0	90.0	88.2	87.0	86.2	86.9
Gas (piped) and electricity	121.6	124.6	124.6	124.9	122.4	121.0	119.2	118.9	118.9	120.2	124.5	124.6	123.6	122.9	119.1
Household furnishings and operations	123.2	123.9	123.9	123.7	123.6	124.1	124.7	125.0	125.6	125.2	125.2	125.6	125.2	124.9	124.9
Apparel	130.9	132.1	133.9	133.6	130.3	128.7	130.4	133.0	134.0	133.7	131.0	128.2	129.9	132.0	134.3
Men's and boys' apparel	127.4	129.9	132.4	132.7	130.7	129.4	130.1	132.8	132.9	133.1	130.7	129.1	129.9	130.7	134.1
Women's and girls' apparel	123.6	124.9	126.8	127.0	121.5	118.5	122.3	127.3	128.3	127.4	123.4	118.6	121.3	125.5	126.9
Infants' and toddlers' apparel[1]	130.8	130.1	127.7	127.1	126.5	125.3	123.1	124.5	126.9	127.4	125.4	122.7	125.0	125.8	131.0
Footwear	127.6	128.5	131.8	130.4	129.2	128.4	127.4	127.1	128.4	129.0	128.8	127.4	128.4	129.3	130.9
Transportation	142.8	143.6	143.6	143.1	142.4	141.7	140.9	140.1	140.3	141.1	140.9	140.8	140.2	139.6	140.4
Private transportation	140.7	141.3	141.1	140.8	140.1	139.3	138.4	137.4	137.7	138.6	138.5	138.2	137.6	137.1	137.9
New and used motor vehicles[2]	–	–	99.7	99.9	100.0	100.1	100.2	100.0	100.1	100.1	100.0	100.2	100.2	100.1	100.4
New vehicles	144.7	145.5	144.7	145.1	145.3	145.6	145.5	145.6	145.5	144.5	143.8	143.9	144.0	143.4	143.6
Used cars and trucks[1]	158.2	152.6	149.4	149.2	149.5	149.7	149.9	148.8	149.5	151.3	152.3	152.7	152.4	153.2	154.2

28. Continued—Consumer Price Indexes for All Urban Consumers and for Urban Wage Earners and Clerical Workers: U.S. city average, by expenditure category and commodity or service group

[1982–84 = 100, unless otherwise indicated]

Series	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Motor fuel	106.3	106.2	106.6	104.4	101.7	97.6	94.1	91.0	91.9	95.0	95.0	93.9	91.7	90.1	90.9
Gasoline (all types)	105.9	105.8	106.3	104.0	101.2	97.1	93.6	90.5	91.3	94.5	94.5	93.4	91.2	89.6	90.4
Motor vehicle parts and equipment	101.3	101.0	100.6	100.7	100.8	100.7	100.9	100.7	99.9	99.9	100.3	100.5	100.5	100.5	100.7
Motor vehicle maintenance and repair	159.3	163.7	164.9	165.1	165.7	166.0	166.5	166.7	166.8	167.0	167.6	168.0	168.4	169.4	170.3
Public transportation	179.6	184.2	187.8	183.9	182.5	184.7	187.9	190.2	190.1	187.4	185.5	188.7	188.9	186.5	186.3
Medical care	227.6	234.0	235.2	235.8	236.5	237.4	238.7	239.1	239.9	240.6	241.4	242.1	242.8	243.2	243.7
Medical care commodities	207.8	212.6	212.9	213.1	214.1	214.7	215.4	215.5	217.0	218.3	218.9	219.1	219.9	220.8	220.8
Medical care services	232.1	238.8	240.3	240.8	241.6	242.5	244.0	244.5	245.1	245.6	246.4	247.2	248.0	248.2	248.8
Professional services	209.5	216.7	218.1	218.5	218.9	219.8	221.0	221.8	222.5	223.2	224.1	224.4	224.8	225.3	225.8
Hospital and related services	266.5	274.7	276.4	277.4	278.7	279.6	281.4	281.4	281.7	281.7	282.0	284.3	285.6	285.3	286.4
Recreation[2]	–	–	100.1	100.0	100.0	100.3	100.7	101.0	101.0	100.9	101.0	100.9	101.1	101.0	100.8
Video and audio[1,2]	–	–	99.9	100.3	100.0	100.5	101.2	101.4	101.4	101.1	101.1	101.0	101.1	101.3	101.0
Education and communication[2]	–	–	99.9	100.0	100.0	100.0	99.8	100.0	100.1	100.3	100.3	100.2	100.3	101.1	101.1
Education[2]	–	–	99.8	99.9	100.0	100.3	100.4	100.5	100.7	100.9	100.9	101.1	102.6	104.3	104.5
Educational books and supplies	228.2	240.4	244.7	244.7	245.2	247.5	249.4	250.0	251.2	251.3	250.9	251.3	251.3	255.9	259.4
Tuition, other school fees, and child care	261.0	274.6	282.1	282.3	282.7	283.5	283.5	283.9	284.4	284.9	284.7	285.3	289.9	294.9	295.2
Communication[1,2]	–	–	99.9	100.1	100.0	99.7	99.3	99.5	99.5	99.7	99.8	99.6	98.4	98.5	98.4
Information and information processing[1,2]	–	–	99.9	100.1	100.0	99.6	99.3	99.5	99.5	99.7	99.8	99.5	98.3	98.4	98.3
Telephone services[1,2]	–	–	–	–	100.0	99.9	100.0	100.4	100.5	101.2	101.4	101.5	100.5	100.8	100.8
Information and information processing other than telephone services[1,4]	57.7	51.1	50.1	49.3	48.9	47.7	45.8	44.8	44.1	42.6	41.8	40.2	38.9	38.2	37.4
Personal computers and peripheral equipment[1,2]	–	–	–	–	100.0	96.6	91.1	88.3	86.0	81.9	79.5	74.4	71.2	69.0	67.5
Other goods and services	212.2	221.6	226.1	226.7	226.9	228.2	230.6	229.3	232.3	234.8	234.0	236.0	236.2	239.4	240.4
Tobacco and smoking products	232.5	243.3	249.9	250.5	250.9	253.6	261.1	253.7	263.6	270.1	266.8	273.4	273.7	283.7	285.2
Personal care[1]	150.1	152.6	153.3	154.3	153.9	154.5	155.0	155.5	155.9	156.7	156.8	157.0	157.2	157.7	158.3
Personal care products[1]	145.0	145.1	145.4	147.1	146.1	147.0	147.6	148.2	148.4	150.5	150.3	150.1	149.6	150.1	150.4
Personal care services[1]	156.6	162.5	163.5	163.7	164.1	164.5	164.5	164.9	165.5	165.7	165.6	166.4	167.0	167.4	167.8
Miscellaneous personal services	214.7	225.2	227.7	228.3	228.9	229.8	231.1	231.7	232.5	233.0	233.6	233.9	234.9	236.0	236.6
Commodity and service group:															
Commodities	139.9	141.8	142.3	142.1	141.6	141.4	141.3	141.1	141.6	142.1	141.7	141.5	141.5	141.7	142.4
Food and beverages	153.2	157.2	158.1	158.3	158.5	159.6	159.2	159.4	159.5	159.9	159.9	160.2	160.7	160.8	161.6
Commodities less food and beverages	131.8	132.4	132.7	132.3	131.3	130.5	130.5	130.1	130.9	131.4	130.7	130.3	130.0	130.3	131.0
Nondurables less food and beverages	132.8	134.5	135.7	135.1	133.1	131.5	131.5	131.2	132.3	133.6	132.5	131.4	131.3	132.1	133.2
Apparel	130.9	132.1	133.9	133.6	130.3	128.7	130.4	133.0	134.0	133.7	131.0	128.2	129.9	132.0	134.3
Nondurables less food, beverages, and apparel	138.3	140.4	141.2	140.5	139.3	137.6	136.7	134.8	136.0	138.2	137.8	137.7	136.6	136.6	137.3
Durables	129.2	128.4	127.3	127.3	127.5	127.7	127.7	127.5	127.6	127.3	127.2	127.3	127.0	126.7	126.9
Services	174.1	176.5	178.0	178.1	178.2	178.7	179.1	179.6	179.9	180.3	181.1	181.6	181.9	182.2	182.3
Rent of shelter[3]	159.9	164.7	166.2	166.3	166.6	167.4	168.1	168.6	169.0	169.2	169.8	170.4	171.0	171.3	171.8
Transporatation services	178.3	182.6	184.2	184.0	183.9	184.9	185.3	185.8	185.7	185.4	184.9	185.2	185.1	184.7	185.8
Other services	198.1	206.4	209.4	209.5	209.9	210.5	211.2	211.9	212.4	213.0	213.4	213.7	214.3	215.7	215.7
Special indexes:															
All items less food	154.3	157.6	158.6	158.5	158.1	158.1	158.4	158.5	159.0	159.4	159.6	159.7	159.8	160.0	160.4
All items less shelter	151.0	154.0	154.8	154.7	154.2	154.2	154.1	154.2	154.6	155.1	155.1	155.0	155.1	155.3	155.7
All items less medical care	150.7	154.0	154.9	154.9	154.5	154.7	154.8	154.9	155.3	155.7	155.9	156.0	156.1	156.3	156.8
Commodities less food	132.8	133.6	133.9	133.5	132.5	131.8	131.8	131.5	132.2	132.7	132.1	131.5	131.4	131.7	132.4
Nondurables less food	134.3	136.2	137.3	136.7	135.0	133.5	133.5	133.2	134.2	135.5	134.4	133.4	133.3	134.0	135.2
Nondurables less food and apparel	139.3	141.6	142.4	141.7	140.7	139.2	138.3	136.6	137.8	139.7	139.4	139.3	138.3	138.4	139.0
Nondurables	143.3	146.2	147.2	147.0	146.2	145.9	145.6	145.6	146.2	147.1	146.5	146.1	146.3	146.7	147.7
Services less rent of shelter[3]	162.7	167.6	169.0	169.1	168.8	169.1	169.2	169.6	169.8	170.2	171.2	171.5	171.5	171.8	171.3
Services less medical care services	166.2	171.2	172.7	172.8	172.7	173.2	173.6	174.1	174.4	174.7	175.5	176.0	176.3	176.6	176.6
Energy	109.8	111.1	111.0	110.1	107.7	105.0	102.4	100.8	101.1	103.2	105.0	104.5	102.9	101.8	100.5
All items less energy	160.4	164.1	165.2	165.3	165.2	165.8	166.3	166.7	167.1	167.3	167.2	167.4	167.8	168.3	168.9
All items less food and energy	162.3	166.0	167.1	167.2	167.1	167.5	168.2	168.6	169.1	169.3	169.2	169.4	169.8	170.3	170.9
Commodities less food and energy	140.9	141.9	142.2	142.2	141.5	141.5	142.1	142.3	143.1	143.1	142.3	142.0	142.2	142.8	143.5
Energy commodities	105.9	105.9	105.8	104.0	101.6	97.7	94.3	91.4	92.1	95.0	94.8	93.7	91.5	90.0	90.8
Services less energy	176.8	182.2	183.9	184.0	184.3	185.1	185.8	186.4	186.7	186.9	187.3	187.9	188.4	188.8	189.3

[1] Not seasonally adjusted.

[2] Indexes on a December 1997 = 100 base.

[3] Indexes on a December 1982 = 100 base.

[4] Indexes on a December 1988 = 100 base.

– Data not available.

NOTE: Index applies to a month as a whole, not to any specific date.

29. Consumer Price Index: U.S. city average and available local area data: all items

[1982–84 = 100, unless otherwise indicated]

Area	Pricing schedule[1]	All Urban Consumers							Urban Wage Earners						
		1997		1998					1997		1998				
		Sept.	Oct.	June	July	Aug.	Sept.	Oct.	Sept.	Oct.	June	July	Aug.	Sept.	Oct.
U.S. city average	M	161.2	161.6	163.0	163.2	163.4	163.6	164.0	158.3	158.5	159.7	159.8	160.0	160.2	160.6
Region and area size[2]															
Northeast urban	M	168.4	168.7	169.6	169.9	170.5	170.6	171.3	165.6	165.8	166.5	166.6	167.1	167.4	168.1
Size A—More than 1,500,000	M	169.2	169.5	170.4	170.7	171.4	171.7	172.3	165.4	165.5	166.3	166.5	167.1	167.5	168.1
Size B/C—50,000 to 1,500,000[3]	M	101.3	101.4	101.9	102.0	102.2	102.2	102.6	101.1	101.2	101.5	101.5	101.7	101.8	102.2
Midwest urban[4]	M	157.5	157.7	159.5	159.8	159.5	159.9	160.1	153.9	154.0	155.7	155.9	155.6	156.0	156.2
Size A—More than 1,500,000	M	158.3	158.4	160.8	161.2	161.0	161.4	161.4	153.9	153.9	156.2	156.5	156.4	156.7	156.7
Size B/C—50,000 to 1,500,000[3]	M	101.2	101.3	102.2	102.2	102.0	102.2	102.4	101.1	101.2	101.9	101.9	101.7	101.9	102.1
Size D—Nonmetropolitan (less than 50,000)	M	153.4	153.2	153.3	153.5	153.3	154.0	154.3	151.5	151.1	151.3	151.7	151.4	152.2	152.4
South urban	M	157.5	157.8	159.1	159.3	159.5	159.5	159.8	155.9	156.1	157.1	157.2	157.5	157.5	157.8
Size A—More than 1,500,000	M	156.4	156.7	158.4	158.5	158.9	158.8	159.0	154.5	154.7	155.9	156.1	156.3	156.3	156.6
Size B/C—50,000 to 1,500,000[3]	M	101.5	101.8	102.3	102.4	102.5	102.5	102.8	101.3	101.5	101.8	101.9	102.1	102.1	102.4
Size D—Nonmetropolitan (less than 50,000)	M	157.1	156.9	160.0	160.0	160.2	160.1	159.8	157.7	157.3	160.4	160.4	160.6	160.6	160.4
West urban	M	162.1	162.8	164.2	164.3	164.8	165.1	165.5	158.6	159.3	160.3	160.3	160.7	160.9	161.5
Size A—More than 1,500,000	M	162.3	163.1	165.0	165.1	165.6	165.9	166.3	157.2	157.9	159.3	159.3	159.7	160.0	160.5
Size B/C—50,000 to 1,500,000[3]	M	101.8	102.1	102.3	102.3	102.5	102.7	103.0	101.8	102.1	102.1	102.1	102.3	102.5	102.8
Size classes:															
A[5]	M	145.6	146.0	147.5	147.7	148.1	148.2	148.5	144.4	144.7	146.0	146.2	146.4	146.6	147.0
B/C[3]	M	101.4	101.7	102.2	102.3	102.4	102.4	102.7	101.3	101.5	101.8	101.9	101.9	102.0	102.4
D	M	157.4	157.6	159.2	159.3	159.4	159.7	159.7	156.6	156.7	158.1	158.3	158.3	158.7	158.9
Selected local areas[6]															
Chicago–Gary–Kenosha, IL–IN–WI	M	162.1	162.5	166.0	166.5	165.4	165.3	165.7	156.4	156.9	160.2	160.6	159.6	159.6	160.0
Los Angeles–Riverside–Orange County, CA	M	160.5	161.1	162.2	162.1	162.6	162.6	163.2	154.7	155.4	156.1	155.9	156.1	156.1	156.8
New York, NY–Northern NJ–Long Island, NY–NJ–CT–PA.	M	171.7	172.3	173.1	173.6	174.2	174.4	174.8	167.7	168.1	168.8	169.1	169.7	169.9	170.5
Boston–Brockton–Nashua, MA–NH–ME–CT	1	167.8	–	–	170.7	–	172.1	–	166.2	–	–	168.8	–	169.9	–
Cleveland–Akron, OH	1	157.3	–	–	159.9	–	161.5	–	149.2	–	–	152.1	–	153.3	–
Dallas–Ft Worth, TX	1	–	152.8	–	154.2	–	154.5	–	–	152.8	–	154.0	–	154.3	–
Washington–Baltimore, DC–MD–VA–WV[7]	1	101.4	–	–	102.8	–	102.9	–	101.4	–	–	102.5	–	102.7	–
Atlanta, GA	2	–	–	162.0	–	161.9	–	162.0	–	–	159.3	–	159.1	–	159.2
Detroit–Ann Arbor–Flint, MI	2	–	157.9	159.4	–	160.5	–	161.0	–	152.4	154.0	–	155.1	–	155.7
Houston–Galveston–Brazoria, TX	2	–	147.3	146.4	–	147.4	–	148.5	–	146.3	145.1	–	146.1	–	146.9
Miami–Ft. Lauderdale, FL	2	158.5	–	160.2	–	160.8	–	161.1	156.1	–	157.6	–	158.0	–	158.6
Philadelphia–Wilmington–Atlantic City, PA–NJ–DE–MD	2	168.6	167.7	168.0	–	168.6	–	170.3	167.9	166.8	167.4	–	167.9	–	169.3
San Francisco–Oakland–San Jose, CA	2	161.6	162.5	165.5	–	166.6	–	167.2	158.6	159.5	161.7	–	162.7	–	163.4
Seattle–Tacoma–Bremerton, WA	2	–	–	167.5	–	168.5	–	169.3	–	–	162.8	–	163.8	–	164.9

[1] Foods, fuels, and several other items priced every month in all areas; most other goods and services priced as indicated:
M—Every month.
1—January, March, May, July, September, and November.
2—February, April, June, August, October, and December.

[2] Regions defined as the four Census regions.

[3] Indexes on a December 1996 = 100 base.

[4] The "North Central" region has been renamed the "Midwest" region by the Census Bureau. It is composed of the same geographic entities.

[5] Indexes on a December 1986 = 100 base.

[6] In addition, the following metropolitan areas are published semiannually and appear in tables 34 and 39 of the January and July issues of the *CPI Detailed Report*: Anchorage, AK; Cincinnati–Hamilton, OH–KY–IN; Denver–Boulder–Greeley, CO; Honolulu, HI; Kansas City, MO–KS; Milwaukee–Racine, WI; Minneapolis–St. Paul, MN–WI; Pittsburgh, PA; Portland–Salem, OR–WA; St Louis, MO–IL; San Diego, CA; Tampa–St. Petersburg–Clearwater, FL.

[7] Indexes on a November 1996 = 100 base.

– Data not available.

NOTE: Local area CPI indexes are byproducts of the national CPI program. Each local index has a smaller sample size and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses.

Index applies to a month as a whole, not to any specific date.

30. Annual data: Consumer Price Index, U.S. city average, all items and major groups

[1982–84 = 100]

Series	1989	1990	1991	1992	1993	1994	1995	1996	1997
Consumer Price Index for All Urban Consumers:									
All items:									
Index	124.0	130.7	136.2	140.3	144.5	148.2	152.4	156.9	160.5
Percent change	4.8	5.4	4.2	3.0	3.0	2.6	2.8	3.0	2.3
Food and beverages:									
Index	124.9	132.1	136.8	138.7	141.6	144.9	148.9	153.7	157.7
Percent change	5.7	5.8	3.6	1.4	2.1	2.3	2.8	3.2	2.6
Housing:									
Index	123.0	128.5	133.6	137.5	141.2	144.8	148.5	152.8	156.8
Percent change	3.8	4.5	4.0	2.9	2.7	2.5	2.6	2.9	2.6
Apparel:									
Index	118.6	124.1	128.7	131.9	133.7	133.4	132.0	131.7	132.9
Percent change	2.8	4.6	3.7	2.5	1.4	–.2	–1.0	–0.2	.9
Transportation:									
Index	114.1	120.5	123.8	126.5	130.4	134.3	139.1	143.0	144.3
Percent change	5.0	5.6	2.7	2.2	3.1	3.0	3.6	2.8	0.9
Medical care:									
Index	149.3	162.8	177.0	190.1	201.4	211.0	220.5	228.2	234.6
Percent change	7.7	9.0	8.7	7.4	5.9	4.8	4.5	3.5	2.8
Other goods and services:									
Index	147.7	159.0	171.6	183.3	192.9	198.5	206.9	215.4	224.8
Percent change	7.8	7.7	7.9	6.8	5.2	2.9	4.2	4.1	4.4
Consumer Price Index for Urban Wage Earners and Clerical Workers:									
All items:									
Index	122.6	129.0	134.3	138.2	142.1	145.6	149.8	154.1	157.6
Percent change	4.8	5.2	4.1	2.9	2.8	2.5	2.9	2.9	2.3

31. Producer Price Indexes, by stage of processing

[1982 = 100]

Grouping	Annual average		1997			1998									
	1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Finished goods	131.3	131.8	132.3	131.7	131.1	130.3	130.2	130.1	130.4	130.6	130.7	131.0	130.7	130.6	131.4
Finished consumer goods	129.5	130.2	130.7	130.1	129.4	128.3	128.2	128.1	128.5	128.9	129.1	129.4	129.2	129.2	129.7
Finished consumer foods	133.6	134.5	135.1	134.6	134.4	133.1	133.6	133.4	133.8	133.6	133.8	134.7	135.2	135.4	135.5
Finshed consumer goods excluding foods	127.6	128.2	128.7	128.0	127.2	126.1	125.6	125.6	126.0	126.7	127.0	127.0	126.4	126.3	127.1
Nondurable goods less food	123.3	124.3	124.6	123.9	123.0	121.5	120.8	120.9	121.5	122.8	123.4	123.3	122.7	122.8	122.5
Durable goods	134.2	133.7	134.7	134.1	133.4	133.4	133.4	133.2	133.0	132.3	131.8	132.0	131.5	131.0	134.3
Capital equipment	138.3	138.2	138.5	138.3	137.9	137.9	137.9	137.9	137.7	137.3	137.2	137.1	136.8	136.5	138.0
Intermediate materials, supplies, and components	125.7	125.6	125.5	125.5	125.0	124.2	123.8	123.3	123.3	123.5	123.5	123.5	123.2	123.0	122.3
Materials and components for manufacturing	128.6	128.3	128.0	128.2	128.0	127.5	127.3	127.0	126.9	126.8	126.3	126.0	126.0	125.6	125.1
Materials for food manufacturing	125.3	123.2	122.4	124.2	123.2	119.9	121.6	121.0	121.7	123.7	123.0	122.9	124.6	124.6	125.3
Materials for nondurable manufacturing	130.5	129.6	129.9	130.0	130.2	129.9	129.1	128.6	128.2	127.9	127.4	126.9	126.3	125.5	124.8
Materials for durable manufacturing	131.3	132.8	132.3	132.1	131.4	130.5	130.3	129.8	130.0	129.2	128.1	127.8	127.8	127.1	126.0
Components for manufacturing	126.9	126.4	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	126.0	125.8	125.8	125.8	125.7
Materials and components for construction	143.6	146.5	146.4	146.6	146.4	146.3	146.4	146.7	147.0	146.9	146.7	147.2	147.4	147.2	146.7
Processed fuels and lubricants	90.0	89.3	89.1	88.3	86.1	83.3	81.6	79.6	80.1	81.7	83.1	83.2	82.2	82.6	80.5
Containers	141.1	136.0	136.4	138.1	139.9	141.4	141.9	141.6	141.0	141.7	141.4	141.3	140.7	140.9	140.1
Supplies	135.9	135.9	135.8	136.1	136.0	135.5	135.3	135.5	135.1	134.8	134.7	135.1	134.7	134.3	134.1
Crude materials for further processing	113.8	111.1	112.7	114.7	107.8	101.7	100.1	99.4	100.3	100.5	97.6	98.1	94.3	92.9	93.9
Foodstuffs and feedstuffs	121.5	112.2	110.1	110.4	109.0	105.5	105.1	106.3	105.8	106.2	106.2	103.7	103.3	100.9	103.4
Crude nonfood materials	104.5	106.4	110.3	113.4	103.2	95.4	93.0	91.0	92.9	92.9	88.2	90.6	84.7	84.1	83.9
Special groupings:															
Finished goods, excluding foods	130.5	130.9	131.3	130.8	130.1	129.4	129.0	129.0	129.2	129.6	129.7	129.7	129.2	129.1	130.0
Finished energy goods	83.2	83.4	83.2	81.9	80.2	77.5	75.9	74.2	74.7	76.3	77.2	76.9	75.4	75.4	74.8
Finished goods less energy	139.6	140.2	140.9	140.6	140.3	140.0	140.3	140.7	140.9	140.7	140.6	141.0	141.1	141.0	142.1
Finished consumer goods less energy	140.1	141.0	141.8	141.4	141.2	140.8	141.2	141.8	142.0	141.9	142.0	142.5	142.7	142.7	143.6
Finished goods less food and energy	142.0	142.4	143.0	142.8	142.6	142.7	142.8	143.5	143.5	143.4	143.3	143.4	143.3	143.1	144.6
Finished consumer goods less food and energy	144.3	145.1	146.0	145.8	145.5	145.7	146.0	147.1	147.3	147.3	147.2	147.4	147.5	147.4	148.9
Consumer nondurable goods less food and energy	151.4	153.4	154.3	154.4	154.5	154.8	155.3	157.5	158.2	158.8	159.0	159.2	159.8	160.0	160.0
Intermediate materials less foods and feeds	125.6	125.7	125.6	125.6	125.1	124.5	124.1	123.7	123.8	123.9	124.0	123.9	123.6	123.5	122.7
Intermediate foods and feeds	128.1	125.4	122.6	124.3	123.5	118.7	118.5	116.9	115.6	116.3	115.6	116.4	116.5	114.8	114.6
Intermediate energy goods	89.8	89.0	88.8	88.0	85.9	83.0	81.4	79.4	79.9	81.5	82.8	82.9	81.9	82.3	80.3
Intermediate goods less energy	133.6	133.7	133.5	133.8	133.7	133.3	133.2	133.1	133.0	132.9	132.5	132.5	132.4	132.0	131.6
Intermediate materials less foods and energy	134.0	134.2	134.2	134.4	134.3	134.3	134.2	134.1	134.1	133.9	133.6	133.6	133.4	133.2	132.7
Crude energy materials	85.0	87.3	92.8	97.1	84.3	74.9	71.7	69.6	72.7	72.7	66.9	70.9	64.5	64.2	65.4
Crude materials less energy	130.0	123.5	121.5	121.6	120.1	117.0	116.8	117.2	116.4	116.6	116.4	113.9	112.5	110.4	111.0
Crude nonfood materials less energy	155.8	156.5	155.0	154.3	152.5	150.5	150.7	149.2	147.6	147.2	146.6	143.8	139.8	138.1	133.7

32. Producer Price Indexes for the net output of major industry groups

[December 1984 = 100, unless otherwise indicated]

SIC	Industry	Annual average		1997			1998									
		1996	1997	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
–	**Total mining industries**	84.4	86.1	90.2	93.2	83.2	76.4	73.6	72.2	74.1	74.2	69.6	72.3	67.7	67.3	68.1
10	Metal mining	92.1	85.8	83.2	78.9	74.8	73.5	74.2	74.6	76.6	75.5	73.9	74.7	71.6	74.5	72.8
12	Coal mining (12/85 = 100)	91.4	92.2	91.3	91.0	93.2	88.2	90.2	89.7	90.7	90.2	90.2	89.9	87.6	87.8	88.0
13	Oil and gas extraction (12/85 = 100)	84.8	87.5	93.4	98.0	84.5	76.2	72.0	70.2	72.3	72.6	66.6	70.1	64.6	63.8	64.9
14	Mining and quarrying of nonmetallic minerals, except fuels	127.1	128.8	129.6	129.7	129.9	130.6	131.0	131.4	132.2	132.2	132.5	132.6	132.8	132.7	132.8
–	**Total manufacturing industries**	127.1	127.5	127.6	127.5	127.0	126.4	126.1	125.9	126.2	126.4	126.2	126.2	126.0	126.0	126.4
20	Food and kindred products	127.1	127.9	127.5	127.5	127.1	125.8	126.0	125.5	125.5	125.9	126.4	126.6	127.4	127.2	126.5
21	Tobacco manufactures	199.1	210.8	219.4	219.3	219.3	219.6	223.7	223.7	231.0	237.7	237.9	237.9	246.4	247.0	247.0
22	Textile mill products	118.2	118.8	119.1	119.0	119.2	119.0	119.3	119.2	119.1	119.1	119.0	118.7	118.7	118.4	117.8
23	Apparel and other finished products made from fabrics and similar materials	122.3	123.4	123.4	124.2	124.2	124.4	124.3	124.5	124.7	124.9	124.9	124.9	124.9	125.0	125.1
24	Lumber and wood products, except furniture	153.5	158.9	157.3	158.2	157.9	157.4	158.2	158.2	158.5	157.4	155.6	157.0	158.2	157.1	155.3
25	Furniture and fixtures	136.2	138.2	138.6	138.9	138.9	139.1	139.3	139.4	139.4	139.7	139.6	139.6	139.7	139.7	139.9
26	Paper and allied products	138.6	133.5	134.6	135.9	137.3	137.7	137.8	137.5	137.0	137.0	136.7	136.7	136.3	135.6	135.3
27	Printing, publishing, and allied industries	165.6	169.1	170.7	171.1	171.3	173.2	173.0	173.1	174.0	173.9	173.6	173.7	173.7	174.2	174.8
28	Chemicals and allied products	145.8	147.1	147.3	147.3	147.3	147.3	147.1	149.2	149.8	149.7	149.5	149.5	149.1	149.2	148.2
29	Petroleum refining and related products	87.4	85.6	84.8	83.6	79.1	73.8	70.1	65.6	67.9	70.2	68.0	67.0	63.6	64.4	65.5
30	Rubber and miscellaneous plastics products	123.1	122.8	122.7	122.8	122.8	122.7	122.6	122.5	122.5	122.3	122.1	121.9	121.9	121.8	121.8
31	Leather and leather products	134.7	137.1	137.5	137.9	137.4	137.4	137.4	137.4	137.1	137.2	137.2	137.3	137.1	137.2	137.2
32	Stone, clay, glass, and concrete products	125.8	127.4	127.8	127.8	127.7	127.6	127.8	127.9	128.7	129.0	129.4	129.9	130.1	130.3	130.2
33	Primary metal industries	123.7	124.7	124.8	124.5	123.9	123.3	123.0	122.7	122.6	122.1	121.6	120.9	120.6	120.1	119.1
34	Fabricated metal products, except machinery and transportation transportation equipment	126.2	127.6	128.1	128.2	128.1	128.3	128.4	128.5	128.6	128.8	128.9	128.8	128.8	128.9	128.9
35	Machinery, except electrical	119.2	118.5	118.1	118.0	118.0	118.1	118.0	117.9	117.8	117.7	117.7	117.7	117.5	117.5	117.4
36	Electrical and electronic machinery, equipment, and supplies	113.2	111.6	110.8	110.8	110.8	110.8	110.6	110.7	110.5	110.4	110.4	110.4	110.3	110.2	110.1
37	Transportation	134.2	134.1	135.0	134.4	133.7	133.8	134.0	133.9	133.8	133.0	132.5	132.7	132.2	131.6	135.2
38	Measuring and controlling instruments; photographic, medical, and optical goods; watches and clocks	125.0	125.6	125.7	125.8	125.8	125.6	125.9	126.1	126.3	126.2	126.2	125.8	125.9	126.2	125.8
39	Miscellaneous manufacturing industries (12/85 = 100)	127.8	129.0	129.4	129.1	129.1	129.6	129.6	129.7	129.6	129.7	129.6	129.7	129.8	129.9	130.0
	Service industries:															
42	Motor freight transportation and warehousing (06/93 = 100)	106.3	108.9	109.3	109.0	109.4	110.5	110.6	110.7	110.9	111.3	111.5	111.9	112.1	112.4	112.5
43	U.S. Postal Service (06/89 = 100)	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3	132.3
44	Water transportation (12/92 = 100)	103.7	104.2	104.6	104.1	103.3	103.0	102.7	102.3	102.2	105.3	106.1	107.9	108.1	108.7	108.4
45	Transportation by air (12/92 = 100)	121.1	125.3	123.7	123.4	123.3	122.6	123.7	123.7	124.3	124.3	124.2	124.2	124.3	126.3	125.2
46	Pipelines, except natural gas (12/92 = 100)	104.6	98.8	98.7	98.7	98.7	99.3	99.3	99.3	99.3	99.3	99.3	99.2	99.2	99.2	99.2

33. Annual data: Producer Price Indexes, by stage of processing

[1982 = 100]

Index	1989	1990	1991	1992	1993	1994	1995	1996	1997
Finished goods									
Total	113.6	119.2	121.7	123.2	124.7	125.5	127.9	131.3	131.8
Foods	118.7	124.4	124.1	123.3	125.7	126.8	129.0	133.6	134.5
Energy	65.7	75.0	78.1	77.8	78.0	77.0	78.1	83.2	83.4
Other	122.1	126.6	131.1	134.2	135.8	137.1	140.0	142.0	142.4
Intermediate materials, supplies, and components									
Total	112.0	114.5	114.4	114.7	116.2	118.5	124.9	125.7	125.6
Foods	112.7	117.9	115.3	113.9	115.6	118.5	119.5	125.3	123.2
Energy	76.1	85.5	85.1	84.3	84.6	83.0	84.1	89.8	89.0
Other	120.2	120.9	121.4	122.0	123.8	127.1	135.2	134.0	134.2
Crude materials for further processing									
Total	103.1	108.9	101.2	100.4	102.4	101.8	102.7	113.8	111.1
Foods	111.2	113.1	105.5	105.1	108.4	106.5	105.8	121.5	112.2
Energy	75.9	85.9	80.4	78.8	76.7	72.1	69.4	85.0	87.3
Other	95.8	107.3	97.5	94.2	94.1	97.0	105.8	105.7	103.5

34. U.S. export price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1997			1998								
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
0	**Food and live animals**	98.5	97.6	96.7	94.9	92.5	92.5	90.8	91.3	90.9	92.3	89.6	86.7	87.7
01	Meat and meat preparations	95.2	96.1	94.6	91.4	90.9	92.1	92.2	93.7	97.8	97.9	98.4	96.3	93.8
04	Cereals and cereal preparations	93.5	94.9	94.4	88.9	91.5	90.4	86.2	85.9	82.6	82.3	74.9	70.2	73.4
05	Vegetables, fruit, and nuts, prepared fresh or dry	98.2	93.4	92.0	99.8	88.6	91.7	92.9	96.4	98.4	101.6	102.2	99.2	99.8
2	**Crude materials, inedible, except fuels**	88.7	88.9	87.8	84.7	85.0	84.2	83.2	83.0	82.0	82.0	79.9	77.8	75.5
21	Hides, skins, and furskins, raw	101.6	103.6	102.6	80.9	83.3	90.1	87.9	85.9	84.8	81.8	83.9	83.5	80.9
22	Oilseeds and oleaginous fruits	108.3	118.2	116.5	110.8	113.1	108.4	105.4	106.7	102.6	106.6	95.3	91.8	87.9
24	Cork and wood	88.6	85.8	85.6	85.8	85.2	84.0	84.0	82.6	82.0	82.4	82.4	81.8	81.6
25	Pulp and waste paper	69.4	68.3	66.8	63.8	64.7	65.0	64.2	63.5	64.0	64.5	64.5	62.7	58.9
26	Textile fibers and their waste	83.4	81.2	80.0	78.2	78.0	77.9	76.0	77.4	79.3	78.5	76.9	76.3	73.7
27	Crude fertilizers and crude minerals	97.9	97.8	97.4	97.5	97.2	97.1	97.1	97.0	97.0	97.1	96.9	96.9	95.1
28	Metalliferous ores and metal scrap	90.0	85.9	83.9	82.1	81.4	79.7	80.3	79.8	76.6	73.0	72.6	69.7	67.8
3	**Mineral fuels, lubricants, and related products**	112.6	112.0	112.8	109.4	108.5	106.2	104.8	104.7	103.2	96.3	94.7	93.5	93.8
32	Coal, coke, and briquettes	102.2	101.8	101.3	101.0	101.0	101.0	100.1	100.1	100.1	99.9	99.5	99.4	99.4
33	Petroleum, petroleum products, and related materials	121.3	120.1	119.0	116.0	114.3	110.5	108.7	108.7	106.8	95.2	92.9	90.8	91.4
4	**Animal and vegetable oils, fats, and waxes**	97.9	106.8	106.5	104.5	101.3	100.8	101.4	106.6	107.9	104.4	103.4	102.7	102.7
5	**Chemicals and related products, n.e.s.**	95.4	95.2	94.9	94.9	94.5	93.6	93.5	93.1	92.6	92.2	92.1	91.8	91.6
54	Medicinal and pharmaceutical products	100.8	100.9	100.9	101.9	101.6	102.3	101.6	101.6	101.6	101.6	101.6	101.6	101.0
55	Essential oils; polishing and cleaning preparations	103.6	102.1	101.9	101.3	102.0	101.5	101.2	101.4	101.4	101.4	101.4	102.7	102.8
57	Plastics in primary forms (12/92 = 100)	93.9	93.6	93.1	92.9	92.4	91.7	90.9	90.5	88.9	88.8	87.9	87.6	87.0
58	Plastics in nonprimary forms (12/92 = 100)	98.7	98.5	98.7	100.3	100.2	99.7	99.8	99.1	97.9	97.2	97.6	97.3	97.0
59	Chemical materials and products, n.e.s.	103.4	103.0	101.9	101.9	101.8	100.5	101.8	100.4	100.6	100.4	100.4	100.0	100.3
6	**Manufactured goods classified chiefly by materials**	98.7	98.9	98.5	98.1	98.5	98.3	98.3	98.2	97.9	97.5	97.3	96.8	96.5
62	Rubber manufactures, n.e.s.	102.2	102.1	102.1	101.8	101.8	102.1	101.9	101.6	101.9	102.2	102.7	102.2	104.0
64	Paper, paperboard, and articles of paper, pulp, and paperboard	85.3	85.2	85.1	84.7	85.0	84.7	84.6	84.1	83.8	82.7	82.2	81.3	81.1
66	Nonmetallic mineral manufactures, n.e.s.	106.1	106.3	107.1	106.7	107.3	107.0	107.0	106.9	106.7	106.6	106.8	106.8	107.1
68	Nonferrous metals	91.9	93.4	91.0	89.5	91.3	91.2	91.5	93.6	88.1	87.4	86.7	85.6	85.7
7	**Machinery and transport equipment**	100.0	100.1	99.8	99.6	99.5	99.3	99.1	99.2	98.7	98.4	98.3	98.2	98.2
71	Power generating machinery and equipment	106.2	106.3	106.2	106.8	106.7	106.8	107.0	107.0	107.1	106.8	106.8	107.0	106.9
72	Machinery specialized for particular industries	104.5	104.5	104.9	104.6	105.1	105.0	104.8	105.1	105.2	105.3	105.3	105.5	105.5
74	General industrial machines and parts, n.e.s., and machine parts	105.4	105.4	105.4	105.6	105.6	105.8	105.9	106.2	106.1	106.3	106.5	106.4	106.5
75	Computer equipment and office machines	83.0	82.7	81.6	80.8	80.5	79.8	79.1	79.0	76.5	76.0	75.4	74.7	74.5
76	Telecommunications and sound recording and reproducing apparatus and equipment	99.5	99.4	98.7	98.6	98.3	98.6	98.3	98.7	98.7	98.1	98.1	98.2	97.8
77	Electrical machinery and equipment	94.8	94.9	94.4	94.0	93.6	93.1	92.7	92.6	92.1	91.3	91.2	91.2	91.2
78	Road vehicles	101.8	101.9	102.0	102.0	101.9	101.8	101.9	101.9	101.9	102.0	102.0	102.0	102.2
87	**Professional, scientific, and controlling instruments and apparatus**	103.3	103.3	103.5	103.5	103.6	103.6	103.6	103.8	103.8	103.9	103.8	103.8	103.9

35. U.S. import price indexes by Standard International Trade Classification

[1995 = 100, unless otherwise indicated]

SITC Rev. 3	Industry	1997			1998									
		Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
0	**Food and live animals**	100.4	99.4	99.6	99.2	97.5	97.9	99.4	97.5	98.0	97.4	93.9	95.5	97.1
01	Meat and meat preparations	102.7	102.7	104.2	101.3	101.3	101.2	101.7	101.3	98.3	97.7	97.8	97.2	95.5
03	Fish and crustaceans, mollusks, and other aquatic invertebrates	107.4	107.3	105.6	105.4	106.4	107.1	107.4	107.2	109.4	106.1	103.9	103.7	104.4
05	Vegetables, fruit, and nuts, prepared fresh or dry	103.1	103.8	102.5	102.9	93.8	95.7	100.8	99.0	103.5	111.7	98.1	106.7	114.7
07	Coffee, tea, cocoa, spices, and manufactures thereof	92.1	86.2	92.1	94.7	97.1	94.0	92.9	86.1	82.1	73.6	79.4	77.4	73.6
1	**Beverages and tobacco**	107.9	108.4	108.6	109.0	109.5	109.2	109.2	109.3	109.6	109.8	109.7	109.7	109.9
11	Beverages	104.4	105.1	105.2	105.4	105.9	105.8	105.8	105.9	106.3	106.5	106.3	106.4	106.6
2	**Crude materials, inedible, except fuels**	94.8	94.0	93.5	91.4	95.1	91.1	89.8	89.3	87.7	87.3	85.7	85.7	83.8
23	Crude rubber (including synthetic and reclaimed)	72.4	71.2	69.1	62.4	64.9	63.9	61.3	57.7	58.8	54.9	53.8	53.8	54.8
24	Cork and wood	113.1	114.0	113.1	109.7	110.0	110.6	110.1	106.6	101.2	105.5	106.6	107.3	102.4
25	Pulp and waste paper	69.0	69.2	68.7	68.3	64.5	64.2	63.7	62.9	66.1	64.6	62.5	60.8	58.1
28	Metalliferous ores and metal scrap	103.7	102.5	102.3	100.3	100.0	100.4	100.7	100.8	98.6	96.0	94.2	92.9	93.2
29	Crude animal and vegetable materials, n.e.s.	113.2	104.8	107.0	108.6	158.2	110.0	102.0	116.0	113.1	113.4	100.9	105.2	103.8
3	**Mineral fuels, lubricants, and related products**	113.1	111.8	103.3	93.5	87.2	80.3	80.5	80.9	77.6	74.3	73.6	75.9	78.4
33	Petroleum, petroleum products, and related materials	111.5	107.8	100.1	89.7	83.7	76.1	76.5	76.9	73.4	69.5	69.4	72.1	75.7
34	Gas, natural and manufactured	132.0	149.7	133.4	127.4	117.3	114.7	113.1	114.3	111.9	112.6	106.8	107.1	100.3
5	**Chemicals and related products, n.e.s.**	95.6	95.2	95.2	94.2	93.9	93.5	93.0	93.6	93.6	92.9	92.3	92.0	92.1
52	Inorganic chemicals	99.7	99.0	97.3	94.1	94.2	94.8	95.5	97.2	97.8	96.1	94.6	93.9	94.6
53	Dying, tanning, and coloring materials	94.2	96.3	96.9	95.3	94.9	94.9	94.7	94.8	94.9	94.6	94.8	94.8	96.3
54	Medicinal and pharmaceutical products	96.2	96.2	96.8	96.4	95.8	95.8	95.5	95.4	95.3	95.0	94.9	94.6	95.6
55	Essential oils; polishing and cleaning preparations	97.4	96.6	97.5	96.2	96.3	94.4	94.1	94.6	94.8	94.3	93.4	93.8	94.5
57	Plastics in primary forms (12/92 = 100)	92.7	91.6	92.0	92.4	96.5	94.4	94.1	94.1	94.0	93.1	91.2	91.6	90.8
58	Plastics in nonprimary forms (12/92 = 100)	85.9	82.9	82.8	82.6	82.6	81.5	80.2	80.0	79.1	77.1	76.4	74.7	74.6
59	Chemical materials and products, n.e.s.	102.8	102.8	103.1	102.9	101.4	101.7	101.3	101.8	101.4	100.4	100.3	100.5	99.0
6	**Manufactured goods classified chiefly by materials**	96.7	96.6	96.0	95.2	94.8	94.7	94.6	94.7	94.0	93.2	93.1	92.7	92.6
62	Rubber manufactures, n.e.s.	95.3	95.4	95.5	95.2	95.2	94.7	94.7	94.7	95.0	94.7	94.2	94.3	94.2
64	Paper, paperboard, and articles of paper, pulp, and paperboard	88.9	89.7	88.5	87.6	87.5	87.9	87.9	87.6	87.5	87.4	86.9	87.0	86.3
66	Nonmetallic mineral manufactures, n.e.s.	102.2	102.2	101.7	101.3	100.7	100.6	100.8	100.7	100.6	100.2	100.4	100.1	100.4
68	Nonferrous metals	95.3	93.4	92.1	90.5	90.6	91.2	91.8	94.2	90.9	88.0	87.9	86.3	85.9
69	Manufactures of metals, n.e.s.	98.5	98.3	98.5	97.9	97.5	97.3	96.9	96.3	96.5	96.2	96.2	96.6	96.9
7	**Machinery and transport equipment**	94.5	94.3	94.0	93.6	93.2	92.9	92.5	92.2	91.8	91.4	91.1	90.9	90.9
72	Machinery specialized for particular industries	98.6	99.0	99.1	98.7	98.1	98.1	97.6	97.6	97.6	97.3	97.1	96.7	97.8
74	General industrial machines and parts, n.e.s., and machine parts	97.4	97.3	97.3	97.1	96.5	96.6	96.3	96.4	96.7	96.3	96.5	96.6	97.6
75	Computer equipment and office machines	77.1	76.7	76.8	75.5	74.4	73.0	71.9	70.9	70.4	69.8	69.3	68.7	67.4
76	Telecommunications and sound recording and reproducing apparatus and equipment	92.3	91.9	91.7	91.4	90.9	90.8	90.7	90.6	89.4	88.9	88.8	88.6	88.3
77	Electrical machinery and equipment	88.6	87.7	86.6	86.2	85.7	85.5	85.5	85.4	84.5	83.8	83.4	83.0	83.5
78	Road vehicles	101.6	101.6	101.5	101.4	101.3	101.5	101.5	101.2	101.1	101.0	100.8	100.7	101.0
85	Footwear	101.0	101.0	101.2	101.2	101.1	100.7	100.6	100.6	100.7	100.8	100.9	100.9	101.4
88	Photographic apparatus, equipment, and supplies, and optical goods, n.e.s.	93.4	92.6	93.1	92.3	92.1	91.8	91.6	91.2	91.0	90.9	90.6	90.1	90.7

36. U.S. export price indexes by end-use category

[1995 = 100]

Category	1997			1998									
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
ALL COMMODITIES	98.6	98.6	98.2	97.5	97.2	96.9	96.5	96.6	96.1	95.8	95.3	94.8	94.7
Foods, feeds, and beverages	99.8	100.2	99.3	96.9	95.0	94.4	92.9	93.8	93.2	94.4	90.9	88.1	88.6
Agricultural foods, feeds, and beverages	100.1	100.7	100.0	97.6	96.2	95.3	93.7	94.7	94.1	94.8	90.5	87.6	88.0
Nonagricultural (fish, beverages) food products	98.0	95.7	94.1	90.9	83.8	86.2	85.7	85.6	84.7	91.5	97.0	94.9	96.1
Industrial supplies and materials	94.8	94.5	93.7	92.3	92.0	91.4	91.0	90.9	90.4	89.3	88.9	88.0	87.5
Agricultural industrial supplies and materials	93.1	94.0	92.7	88.3	87.1	88.2	87.0	87.5	90.3	88.9	87.6	86.0	84.6
Fuels and lubricants	111.3	110.7	110.2	107.1	106.1	103.3	102.2	102.2	100.8	95.7	94.0	92.9	93.9
Nonagricultural supplies and materials, excluding fuel and building materials	92.4	92.3	91.4	90.4	90.3	89.7	89.5	89.4	88.7	87.9	87.7	86.8	86.2
Selected building materials	91.2	89.3	89.3	89.1	88.5	88.0	87.5	86.6	86.0	86.2	87.0	86.8	86.8
Capital goods	99.3	99.3	98.9	98.8	98.8	98.5	98.3	98.2	97.7	97.4	97.2	97.2	97.1
Electric and electrical generating equipment	101.9	102.2	102.2	101.7	101.1	101.3	100.8	100.8	100.5	100.5	100.2	100.1	100.0
Nonelectrical machinery	96.5	96.4	95.9	95.8	95.8	95.5	95.2	95.2	94.5	94.1	93.9	93.9	93.8
Automotive vehicles, parts, and engines	102.2	102.3	102.3	102.3	102.2	102.2	102.3	102.3	102.3	102.4	102.4	102.4	102.8
Consumer goods, excluding automotive	102.6	102.6	102.7	102.5	102.5	102.5	102.2	102.3	101.9	101.9	101.9	102.0	102.1
Nondurables, manufactured	102.1	102.0	102.1	102.2	102.2	102.3	102.1	102.2	102.0	102.0	101.8	102.0	102.2
Durables, manufactured	102.2	102.1	102.0	101.7	101.6	101.3	101.1	101.3	100.7	100.5	100.9	100.9	100.9
Agricultural commodities	98.4	99.1	98.3	95.6	94.2	93.7	92.2	93.1	93.1	93.4	89.6	87.0	87.1
Nonagricultural commodities	98.6	98.5	98.1	97.7	97.5	97.2	97.0	96.9	96.4	96.0	95.9	95.7	95.6

37. U.S. import price indexes by end-use category

[1995 = 100]

Category	1997			1998									
	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
ALL COMMODITIES	98.0	97.6	96.6	95.3	94.4	93.6	93.3	93.2	92.6	91.8	91.4	91.6	91.8
Foods, feeds, and beverages	98.8	97.9	98.1	97.7	96.7	96.6	97.4	96.4	97.1	96.3	94.0	95.4	96.4
Agricultural foods, feeds, and beverages	96.3	95.2	95.7	95.3	93.6	93.4	94.3	92.7	92.8	92.6	89.8	91.7	93.0
Nonagricultural (fish, beverages) food products	105.2	105.2	104.1	103.9	104.7	104.9	105.5	105.8	108.3	105.9	104.9	104.8	105.2
Industrial supplies and materials	102.5	101.8	98.6	94.6	92.2	89.9	89.7	89.9	88.2	86.4	85.8	86.8	87.0
Fuels and lubricants	113.2	111.5	103.3	93.9	87.9	81.0	81.2	81.7	78.5	75.1	74.2	78.2	79.6
Petroleum and petroleum products	111.6	107.7	100.4	90.4	84.5	76.9	77.2	77.6	74.2	70.2	69.8	74.3	75.8
Paper and paper base stocks	83.7	84.4	83.3	82.4	81.3	81.6	81.4	80.9	81.7	81.2	80.2	80.0	80.2
Materials associated with nondurable supplies and materials	94.6	94.3	93.8	92.7	92.2	91.8	91.3	91.3	91.1	89.8	88.8	88.5	88.6
Selected building materials	107.6	108.3	107.6	105.0	104.7	104.6	104.3	102.5	99.7	102.8	104.2	104.4	101.0
Unfinished metals associated with durable goods	97.4	96.4	95.5	94.0	93.8	94.0	94.1	95.4	92.9	90.6	90.1	88.9	88.6
Nonmetals associated with durable goods	94.2	94.2	94.2	93.7	92.6	92.3	91.6	91.3	91.5	90.2	89.7	88.9	88.5
Capital goods	89.8	89.4	89.0	88.2	87.4	87.0	86.5	86.2	85.6	85.0	84.9	84.5	84.4
Electric and electrical generating equipment	96.8	96.6	96.0	95.5	95.8	95.5	95.0	94.7	94.8	94.1	94.1	92.6	92.9
Nonelectrical machinery	87.4	87.0	86.5	85.7	84.7	84.2	83.7	83.4	82.7	82.0	81.9	81.6	81.5
Automotive vehicles, parts, and engines	101.4	101.4	101.3	101.3	101.3	101.4	101.3	101.1	101.0	100.9	100.7	100.6	100.8
Consumer goods, excluding automotive	99.3	99.1	99.2	99.0	99.2	98.6	98.3	98.3	98.2	98.1	97.9	97.8	98.1
Nondurables, manufactured	101.1	100.8	101.0	101.0	101.0	100.9	100.7	100.7	100.9	100.8	100.8	100.8	101.1
Durables, manufactured	97.3	97.1	97.2	96.9	96.6	96.3	95.9	95.8	95.3	95.1	94.9	94.7	95.0
Nonmanufactured consumer goods	101.4	100.1	99.4	98.9	105.8	98.1	97.5	99.3	98.7	98.7	97.1	97.6	97.7

38. U.S. international price indexes for selected categories of services

[1990 = 100, unless otherwise indicated]

Category	1996		1997				1998		
	Sept.	Dec.	Mar.	June	Sept.	Dec.	Mar.	June	Sept.
Air freight (inbound) (9/90 = 100)	95.6	95.0	89.5	89.9	88.5	86.5	82.9	83.4	81.8
Air freight (outbound) (9/92 = 100)	98.9	99.2	99.8	99.2	99.6	97.7	97.2	96.0	95.8
Air passenger fares (U.S. carriers)	107.3	101.6	97.1	112.1	109.2	99.5	99.3	107.8	107.3
Air passenger fares (foreign carriers)	105.5	100.7	98.5	106.1	104.6	99.7	97.6	102.4	104.2
Ocean liner freight (inbound)	98.0	98.4	97.6	96.8	94.9	92.9	93.0	103.2	105.0

39. Indexes of productivity, hourly compensation, and unit costs, quarterly data seasonally adjusted

[1992 = 100]

Item	Quarterly indexes												
	1995		1996				1997				1998		
	III	IV	I	II	III	IV	I	II	III	IV	I	II	III
Business													
Output per hour of all persons	101.0	101.8	102.9	103.8	103.8	104.2	104.5	105.0	106.0	106.2	107.3	107.3	108.1
Compensation per hour	107.2	108.2	108.8	110.3	111.4	112.3	113.4	114.1	115.3	116.8	118.2	119.4	120.5
Real compensation per hour	98.3	98.6	98.4	98.9	99.3	99.3	99.7	100.0	100.5	101.3	102.4	102.9	103.4
Unit labor costs	106.1	106.2	105.7	106.3	107.3	107.8	108.5	108.7	108.8	110.0	110.2	111.3	111.5
Unit nonlabor payments	108.9	109.6	111.9	112.1	111.5	111.8	112.4	113.1	113.5	112.4	112.2	110.5	110.4
Implicit price deflator	107.1	107.4	107.9	108.4	108.8	109.2	109.9	110.3	110.6	110.8	110.9	111.0	111.1
Nonfarm business													
Output per hour of all persons	101.3	102.0	103.0	103.8	103.8	104.1	104.2	104.7	105.6	105.9	106.8	106.8	107.6
Compensation per hour	107.0	107.9	108.6	110.0	111.0	112.0	113.1	113.8	114.9	116.3	117.6	118.8	120.0
Real compensation per hour	98.2	98.4	98.3	98.6	98.9	98.9	99.4	99.7	100.2	100.9	101.9	102.4	103.0
Unit labor costs	105.6	105.8	105.4	106.0	107.0	107.5	108.5	108.7	108.8	109.9	110.2	111.2	111.5
Unit nonlabor payments	110.0	110.3	112.3	112.3	111.6	112.2	112.8	113.6	114.5	113.3	113.2	111.5	111.4
Implicit price deflator	107.2	107.4	107.9	108.2	108.6	109.2	110.0	110.4	110.8	111.1	111.2	111.3	111.4
Nonfinancial corporations													
Output per hour of all employees	105.3	106.0	106.4	107.2	108.0	108.6	109.0	109.7	111.2	111.4	112.2	113.0	114.3
Compensation per hour	106.4	107.3	107.7	109.0	110.1	110.9	111.8	112.6	113.7	115.1	116.2	117.5	118.7
Real compensation per hour	97.6	97.8	97.4	97.7	98.1	98.0	98.3	98.6	99.2	99.9	100.6	101.2	101.8
Total unit costs	100.4	100.5	100.6	100.7	100.8	100.9	101.2	101.2	100.7	101.3	101.4	101.7	101.6
Unit labor costs	101.1	101.1	101.2	101.7	101.9	102.1	102.6	102.6	102.3	103.3	103.5	103.9	103.8
Unit nonlabor costs	98.4	98.8	98.7	97.9	97.5	97.4	97.3	97.1	96.4	95.7	95.4	95.5	95.2
Unit profits	148.5	149.0	153.7	154.1	155.3	155.4	156.6	157.3	161.7	155.7	153.5	150.4	151.6
Unit nonlabor payments	112.3	112.7	113.9	113.5	113.5	113.5	113.7	113.8	114.5	112.3	111.5	110.7	110.8
Implicit price deflator	104.8	104.9	105.4	105.5	105.7	105.8	106.2	106.3	106.3	106.3	106.2	106.1	106.1
Manufacturing													
Output per hour of all persons	110.0	111.2	112.5	113.9	115.5	116.4	117.5	118.8	121.4	122.7	123.2	124.4	126.0
Compensation per hour	108.8	109.3	109.2	110.3	111.2	111.9	113.0	114.0	115.5	117.8	119.0	119.7	120.7
Real compensation per hour	99.8	99.6	98.8	98.9	99.1	98.9	99.3	99.9	100.7	102.2	103.1	103.2	103.6
Unit labor costs	98.8	98.3	97.1	96.8	96.3	96.1	96.2	95.9	95.2	96.0	96.6	96.3	95.8

40. Annual indexes of multifactor productivity and related measures, selected years

[1992 = 100]

Item	1960	1970	1973	1980	1989	1990	1991	1993	1994	1995	1996
Private business											
Productivity:											
Output per hour of all persons	50.8	70.1	75.5	83.8	95.4	96.1	96.7	100.2	100.5	100.5	102.6
Output per unit of capital services	119.1	117.8	122.0	108.1	103.9	102.1	98.6	100.7	102.3	101.5	101.3
Multifactor productivity	70.9	86.6	94.6	95.4	99.9	99.5	98.1	100.2	100.6	100.3	101.3
Output	34.0	51.6	61.3	72.6	97.8	98.5	96.9	102.7	107.0	109.6	113.4
Inputs:											
Labor input	60.7	68.4	72.6	80.5	99.7	100.3	99.0	102.8	107.2	109.9	112.0
Capital services	28.6	43.8	50.3	67.2	94.1	96.6	98.3	102.0	104.6	108.0	112.0
Combined units of labor and capital input	48.0	59.6	64.8	76.1	97.9	99.1	98.8	102.6	106.4	109.3	112.0
Capital per hour of all persons	42.7	59.5	63.9	77.5	91.8	94.1	98.1	99.5	98.3	99.1	101.3
Private nonfarm business											
Productivity:											
Output per hour of all persons	54.3	72.2	80.3	85.5	95.7	96.2	96.9	100.1	100.5	100.7	102.6
Output per unit of capital services	127.4	124.3	128.2	111.3	104.5	102.5	98.8	100.8	102.1	101.4	101.1
Multifactor productivity	75.0	89.3	97.5	97.5	100.4	99.7	98.3	100.2	100.5	100.3	101.2
Output	33.7	51.8	61.8	73.1	98.1	98.8	97.0	103.0	107.1	109.9	113.7
Inputs:											
Labor input	56.5	66.7	71.2	79.4	99.8	100.3	98.9	103.1	107.3	110.0	112.3
Capital services	26.5	41.7	48.2	65.6	93.9	96.4	98.2	102.2	104.9	108.4	112.5
Combined units of labor and capital input	44.9	58.0	63.4	74.9	97.8	99.1	98.6	102.8	106.6	109.5	112.4
Capital per hour of all persons	42.6	58.1	62.6	76.8	91.6	93.9	98.0	99.3	98.4	99.3	101.5
Manufacturing											
Productivity:											
Output per hour of all persons	41.0	54.8	62.2	70.5	90.8	93.0	94.9	102.0	105.2	109.6	114.7
Output per unit of capital services	126.3	119.6	129.1	103.1	103.7	101.1	97.2	101.7	105.3	106.7	107.4
Multifactor productivity	71.7	83.2	90.8	86.9	99.6	99.2	98.3	101.3	104.3	108.3	111.1
Output	37.7	57.1	68.7	75.8	97.4	97.5	95.4	103.4	109.1	114.1	118.8
Inputs:											
Hours of all persons	92.0	104.2	110.5	107.6	107.2	104.8	100.6	101.4	103.7	104.1	103.6
Capital services	29.8	47.8	53.2	73.5	93.9	96.5	98.2	101.7	103.7	106.9	110.6

NOTE: Productivity and output in this table have not been revised for consistency with the December 1991 comprehensive revisions to the National Income and Product Accounts.

41. Annual indexes of productivity, hourly compensation, unit costs, and prices, selected years

[1992 = 100]

Item	1960	1970	1973	1980	1988	1989	1990	1991	1993	1994	1995	1996	1997
Business													
Output per hour of all persons	51.4	70.6	78.4	84.2	94.7	95.5	96.1	96.7	100.1	100.7	101.0	103.7	105.4
Compensation per hour	13.7	23.6	29.0	54.5	83.6	85.9	90.8	95.1	102.5	104.4	106.8	110.7	114.9
Real compensation per hour	64.7	85.4	91.6	92.8	99.1	97.2	97.4	98.0	99.5	98.8	98.4	99.0	100.5
Unit labor costs	26.6	33.5	37.0	64.7	88.3	90.0	94.4	98.3	102.4	103.7	105.8	106.8	109.0
Unit nonlabor payments	24.6	30.6	36.6	59.6	84.1	91.3	93.5	96.6	102.7	106.8	108.8	111.8	112.9
Implicit price deflator	25.8	32.4	36.8	62.8	86.8	90.4	94.1	97.7	102.5	104.8	106.9	108.6	110.4
Nonfarm business													
Output per hour of all persons	54.8	72.7	80.7	86.0	95.3	95.8	96.3	97.0	100.1	100.6	101.2	103.7	105.1
Compensation per hour	14.3	23.8	29.2	54.8	83.7	86.0	90.7	95.1	102.2	104.2	106.7	110.4	114.5
Real compensation per hour	67.8	86.1	92.3	93.4	99.3	97.3	97.3	98.0	99.3	98.7	98.2	98.7	100.1
Unit labor costs	26.1	32.8	36.2	63.8	87.8	89.7	94.2	98.1	102.2	103.6	105.4	106.5	109.0
Unit nonlabor payments	24.0	30.3	34.3	58.6	83.8	90.7	93.1	96.8	103.1	107.4	109.9	112.1	113.6
Implicit price deflator	25.3	31.9	35.5	61.9	86.4	90.0	93.8	97.6	102.5	104.9	107.0	108.5	110.6
Nonfinancial corporations													
Output per hour of all employees	54.5	69.1	74.5	80.4	96.9	95.5	96.1	97.6	101.1	103.5	104.7	107.6	110.4
Compensation per hour	15.6	25.4	30.8	56.7	84.9	87.1	91.5	95.7	102.0	104.1	106.2	109.5	113.4
Real compensation per hour	73.9	91.7	97.2	96.5	100.7	98.5	98.2	98.5	99.1	98.5	97.8	97.9	99.1
Total unit costs	27.8	36.1	40.3	70.2	88.2	92.5	96.2	99.3	100.5	100.3	100.8	100.7	101.1
Unit labor costs	28.6	36.7	41.3	70.5	87.7	91.1	95.2	98.0	100.9	100.6	101.4	101.7	102.7
Unit nonlabor costs	25.3	34.3	37.5	69.2	89.7	96.3	99.1	103.0	99.4	99.7	99.0	97.9	96.6
Unit profits	47.7	42.0	52.8	64.4	103.8	96.0	94.6	93.9	113.3	134.5	143.6	154.6	157.8
Unit nonlabor payments	31.5	36.4	41.7	67.9	93.6	96.2	97.9	100.5	103.2	109.4	111.4	113.6	113.6
Implicit price deflator	29.6	36.6	41.5	69.7	89.6	92.8	96.1	98.8	101.7	103.4	104.7	105.6	106.3
Manufacturing													
Output per hour of all persons	40.9	54.7	62.2	70.5	90.9	90.9	93.0	95.0	102.0	105.2	109.6	114.6	120.1
Compensation per hour	14.9	23.8	28.7	55.8	84.2	86.9	91.0	95.8	102.9	105.8	108.3	110.7	115.1
Real compensation per hour	70.7	86.2	90.6	95.0	99.9	98.3	97.7	98.7	99.9	100.1	99.7	99.0	100.6
Unit labor costs	36.5	43.6	46.1	79.2	92.6	95.5	97.8	100.9	100.9	100.4	98.8	96.6	95.8
Unit nonlabor payments	26.4	30.0	36.8	79.2	90.8	95.5	99.2	98.6	100.8	102.9	106.7	109.2	–
Implicit price deflator	30.2	35.2	40.4	79.2	91.5	95.5	98.7	99.4	100.8	101.9	103.7	104.4	–

– Data not available.

42. Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Copper ores	102	109.2	106.6	102.7	100.5	115.2	118.1	126.0	117.2	115.8
Gold and silver ores	104	101.5	113.3	122.3	127.4	141.6	159.8	160.8	144.2	134.8
Bituminous coal and lignite mining	122	111.7	117.3	118.7	122.4	133.0	141.2	148.1	155.9	170.4
Crude petroleum and natural gas	131	101.0	98.0	97.0	97.9	102.1	105.9	112.4	119.4	126.5
Crushed and broken stone	142	101.3	98.7	102.2	99.8	105.0	103.6	108.7	105.3	107.8
Meat products	201	100.1	99.3	97.1	99.7	104.6	104.3	101.2	102.4	97.7
Dairy products	202	108.4	107.8	107.3	108.4	111.5	109.7	111.9	116.6	115.9
Preserved fruits and vegetables	203	97.0	97.8	95.6	99.2	100.6	106.8	107.6	109.1	109.4
Grain mill products	204	101.3	107.6	105.3	104.9	107.7	109.1	108.4	115.3	107.7
Bakery products	205	96.8	96.1	92.7	90.6	93.8	94.4	96.4	97.3	95.4
Sugar and confectionery products	206	99.4	101.5	102.8	101.3	99.1	103.9	105.4	107.5	112.7
Fats and oils	207	108.9	116.4	118.1	120.1	114.1	112.6	111.8	120.3	111.1
Beverages	208	106.0	112.7	117.7	120.5	127.6	127.0	130.9	134.3	135.7
Miscellaneous food and kindred products	209	107.0	99.3	99.3	101.6	101.6	105.3	101.0	103.1	107.6
Cigarettes	211	101.2	109.0	113.2	107.6	111.6	106.5	126.6	142.9	147.7
Broadwoven fabric mills, cotton	221	99.6	99.8	103.1	111.2	110.3	117.8	122.1	134.0	137.8
Broadwoven fabric mills, manmade	222	99.2	106.3	111.3	116.2	126.2	131.7	142.5	145.2	151.1
Narrow fabric mills	224	108.4	92.7	96.5	99.6	112.9	111.4	120.1	118.9	127.5
Knitting mills	225	96.3	108.0	107.5	114.1	119.5	128.1	134.3	138.6	150.8
Textile finishing, except wool	226	90.3	88.7	83.4	79.9	78.6	79.3	81.2	78.5	79.8
Carpets and rugs	227	98.6	97.8	93.2	89.2	96.1	97.1	93.3	95.8	101.2
Yarn and thread mills	228	102.1	104.2	110.2	111.4	119.6	126.6	130.7	137.4	146.6
Miscellaneous textile goods	229	101.6	109.1	109.2	104.6	106.5	110.4	118.5	123.7	125.4
Men's and boys' suits and coats	231	105.1	97.7	93.9	90.2	89.0	97.4	97.7	92.5	96.5
Men's and boys' furnishings	232	100.1	100.1	102.1	108.4	109.1	108.4	111.7	123.4	134.0
Women's and misses' outerwear	233	101.4	96.8	104.1	104.3	109.4	121.8	127.4	135.5	144.2
Women's and children's undergarments	234	105.4	94.6	102.1	113.6	117.4	124.5	138.0	161.3	171.6
Hats, caps, and millinery	235	99.0	96.4	89.2	91.1	93.6	87.2	77.7	84.3	80.9
Miscellaneous apparel and accessories	238	101.3	88.4	90.6	91.8	91.3	94.0	105.5	116.8	121.3
Miscellaneous fabricated textile products	239	96.6	95.7	99.9	100.7	107.5	108.5	107.8	109.2	106.3
Logging	241	93.7	89.4	86.3	86.0	96.2	88.6	87.8	86.0	86.0
Sawmills and planing mills	242	100.7	99.6	99.8	102.6	108.1	101.9	103.3	110.2	114.9
Millwork, plywood, and structural members	243	98.9	97.1	98.0	98.0	99.9	97.0	94.5	92.7	92.2
Wood containers	244	103.1	108.8	111.2	113.1	109.4	100.1	100.9	106.1	106.5
Wood buildings and mobile homes	245	97.8	98.8	103.1	103.0	103.1	103.8	98.3	97.0	97.0
Miscellaneous wood products	249	95.9	102.4	107.7	110.5	114.2	115.3	111.8	115.4	114.2
Household furniture	251	99.4	102.0	104.5	107.1	110.5	110.6	112.5	116.9	122.2
Office furniture	252	94.3	97.5	95.0	94.1	102.5	103.2	100.5	101.1	106.8
Public building and related furniture	253	109.6	113.7	119.8	120.2	140.6	161.0	157.4	173.3	179.9
Partitions and fixtures	254	95.7	92.4	95.6	93.0	102.7	107.4	98.9	101.2	97.3
Miscellaneous furniture and fixtures	259	103.6	101.9	103.5	102.1	99.5	103.6	104.7	110.0	113.6
Pulp mills	261	99.6	107.4	116.7	128.3	137.3	122.5	128.9	131.9	132.7
Paper mills	262	103.9	103.6	102.3	99.2	103.3	102.4	110.2	119.0	111.9
Paperboard mills	263	105.5	101.9	100.6	101.4	104.4	108.4	114.9	119.5	118.7
Paperboard containers and boxes	265	99.7	101.5	101.3	103.4	105.2	107.9	108.4	105.1	106.5
Miscellaneous converted paper products	267	101.1	101.6	101.4	105.4	105.5	108.0	110.8	113.4	114.6
Newspapers	271	96.9	95.2	90.6	85.8	81.5	79.4	79.9	79.0	77.1
Periodicals	272	97.9	98.3	93.9	89.5	92.9	89.6	82.4	88.5	90.9
Books	273	99.1	94.1	96.6	100.8	97.7	103.5	103.0	101.5	100.5
Miscellaneous publishing	274	96.7	89.0	92.2	95.9	105.8	104.5	97.5	94.8	93.4
Commercial printing	275	100.0	101.1	102.5	102.0	108.0	106.9	106.5	107.2	108.7
Manifold business forms	276	98.7	89.7	93.0	89.1	94.5	91.1	82.0	76.9	74.5
Greeting cards	277	100.1	109.1	100.6	92.7	96.7	91.4	89.0	92.5	91.8
Blankbooks and bookbinding	278	95.6	94.2	99.4	96.1	103.6	98.7	105.4	108.7	115.0
Printing trade services	279	99.9	94.3	99.3	100.6	112.0	115.3	111.0	116.7	126.7
Industrial inorganic chemicals	281	105.7	104.2	106.7	109.6	109.6	105.4	102.0	109.2	110.4
Plastics materials and synthetics	282	98.8	99.7	100.9	100.0	107.5	111.9	125.0	128.7	125.1
Drugs	283	101.1	102.9	103.9	104.7	99.6	100.0	105.5	108.9	112.9
Soaps, cleaners, and toilet goods	284	102.0	100.7	103.8	105.3	104.4	108.7	111.2	118.6	121.4
Paints and allied products	285	101.4	103.3	106.3	104.3	102.9	108.8	116.7	118.0	124.2
Industrial organic chemicals	286	109.8	110.3	101.4	95.8	94.5	92.2	100.0	98.8	98.4
Agricultural chemicals	287	103.8	104.5	105.0	99.9	99.9	104.3	105.7	109.0	111.4
Miscellaneous chemical products	289	95.4	95.2	97.3	96.1	101.8	107.1	105.7	107.8	110.2
Petroleum refining	291	105.3	109.6	109.2	106.6	111.3	120.1	123.8	132.3	142.0
Asphalt paving and roofing materials	295	98.3	95.3	98.0	94.1	100.4	108.0	104.9	111.2	114.4
Miscellaneous petroleum and coal products	299	98.4	101.9	94.8	90.6	101.5	104.2	96.3	87.4	86.4
Tires and inner tubes	301	102.9	103.8	103.0	102.4	107.8	116.5	124.1	131.1	138.8
Hose and belting and gaskets and packing	305	103.7	96.3	96.1	92.4	97.8	99.7	102.7	104.8	107.2
Fabricated rubber products, n.e.c.	306	104.3	105.5	109.2	110.1	115.3	123.2	119.2	121.6	120.3
Miscellaneous plastics products, n.e.c.	308	100.5	101.7	105.6	108.1	114.1	116.4	120.4	120.7	124.9

See footnotes at end of table.

42. Continued—Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Footwear, except rubber	314	101.3	101.1	101.1	94.4	104.2	105.2	113.0	117.1	125.8
Luggage	316	93.7	104.8	106.2	100.3	90.7	89.5	92.3	90.5	108.5
Handbags and personal leather goods	317	98.5	93.1	96.5	93.7	111.2	97.8	86.8	81.8	83.9
Flat glass	321	91.9	90.7	84.5	83.6	92.7	97.7	97.6	99.6	104.2
Glass and glassware, pressed or blown	322	100.6	100.2	104.8	102.3	108.9	108.7	112.9	115.7	121.9
Products of purchased glass	323	95.9	90.1	92.6	97.7	101.5	106.2	105.9	106.1	124.5
Cement, hydraulic	324	103.2	110.2	112.4	108.3	115.1	119.9	125.6	124.3	127.9
Structural clay products	325	98.8	103.1	109.6	109.8	111.5	105.8	113.0	111.6	119.5
Pottery and related products	326	99.6	97.1	98.6	95.8	99.5	100.3	108.4	109.3	119.4
Concrete, gypsum, and plaster products	327	100.8	102.4	102.3	101.2	102.5	104.6	101.5	104.5	107.5
Miscellaneous nonmetallic mineral products	329	103.0	95.5	95.4	94.0	104.3	104.5	106.3	107.8	111.3
Blast furnace and basic steel products	331	112.6	108.0	109.6	107.8	117.1	133.5	142.4	142.7	153.6
Iron and steel foundries	332	104.0	105.4	106.1	104.5	107.2	112.1	113.0	112.7	115.7
Primary nonferrous metals	333	107.8	106.1	102.3	110.9	102.0	108.0	105.4	111.1	111.0
Nonferrous rolling and drawing	335	95.5	93.6	92.7	90.9	95.8	98.2	101.1	99.1	103.9
Nonferrous foundries (castings)	336	102.6	105.1	104.0	103.6	103.6	108.5	112.1	117.8	122.6
Miscellaneous primary metal products	339	106.6	105.0	113.7	109.1	114.5	111.3	134.5	152.2	149.6
Metal cans and shipping containers	341	106.5	108.5	117.6	122.9	127.8	132.3	140.9	144.2	155.2
Cutlery, handtools, and hardware	342	97.8	101.7	97.3	96.8	100.1	104.0	109.2	111.3	117.9
Plumbing and heating, except electric	343	103.7	101.5	102.6	102.0	98.4	102.0	109.1	109.2	118.6
Fabricated structural metal products	344	100.4	96.9	98.8	100.0	103.9	104.8	107.7	105.8	106.7
Screw machine products, bolts, etc	345	98.5	96.1	96.1	97.9	102.3	104.4	107.2	109.7	110.4
Metal forgings and stampings	346	101.5	99.8	95.6	92.9	103.7	108.7	108.5	109.3	113.7
Metal services, n.e.c	347	108.3	102.4	104.7	99.4	111.6	120.6	123.0	127.7	127.5
Ordnance and accessories, n.e.c	348	97.7	89.8	82.1	81.5	88.6	84.6	83.6	87.6	87.4
Miscellaneous fabricated metal products	349	101.4	95.9	97.5	97.3	100.9	101.8	103.0	106.4	108.6
Engines and turbines	351	106.8	110.7	106.5	105.8	103.3	109.2	122.3	122.7	136.9
Farm and garden machinery	352	106.3	110.7	116.5	112.9	113.9	118.6	125.0	134.7	136.6
Construction and related machinery	353	106.5	108.3	107.0	99.1	102.0	108.2	117.7	122.1	123.8
Metalworking machinery	354	101.0	103.5	101.1	96.4	104.3	107.4	109.9	114.8	114.7
Special industry machinery	355	104.6	108.3	107.5	108.3	106.0	113.6	121.2	132.3	134.7
General industrial machinery	356	106.0	101.6	101.5	101.6	101.6	104.8	106.7	109.0	110.0
Refrigeration and service machinery	358	102.1	106.0	103.6	100.7	104.9	108.6	110.7	112.7	114.4
Industrial machinery, n.e.c	359	106.5	107.1	107.3	109.0	116.9	118.4	127.3	138.8	142.1
Electric distribution equipment	361	105.4	105.0	106.3	106.5	119.6	122.2	131.8	143.0	145.1
Electrical industrial apparatus	362	104.5	107.3	107.5	106.8	116.8	132.5	134.5	150.4	154.1
Household appliances	363	103.0	104.7	105.8	106.5	115.0	123.4	131.4	127.3	126.7
Electric lighting and wiring equipment	364	101.9	100.2	99.9	97.5	105.7	107.8	113.4	113.7	117.4
Communications equipment	366	110.4	107.0	120.9	123.8	145.4	149.0	164.8	169.6	189.6
Miscellaneous electrical equipment & supplies	369	102.8	99.6	90.6	98.6	101.3	108.2	110.5	114.1	123.0
Motor vehicles and equipment	371	103.2	103.3	102.4	96.6	104.2	105.3	107.1	104.1	104.1
Aircraft and parts	372	100.5	98.2	98.8	108.1	112.2	115.1	109.5	107.8	112.6
Ship and boat building and repairing	373	99.4	97.6	103.7	96.3	102.7	106.2	103.8	97.9	100.5
Railroad equipment	374	113.5	135.3	141.1	146.9	147.9	151.0	152.5	150.0	146.3
Motorcycles, bicycles, and parts	375	92.6	94.6	93.8	99.8	108.4	130.9	125.1	120.3	123.3
Guided missiles, space vehicles, parts	376	104.8	110.5	115.7	109.8	109.3	120.9	117.5	118.7	127.3
Search and navigation equipment	381	104.8	105.8	112.7	118.9	122.1	129.1	132.1	149.5	141.8
Measuring and controlling devices	382	103.1	101.3	106.1	112.9	119.9	124.0	133.8	146.4	150.4
Medical instruments and supplies	384	104.4	107.2	116.3	118.4	123.3	126.9	126.1	130.9	140.4
Ophthalmic goods	385	112.6	123.3	121.2	125.1	144.5	157.8	160.6	167.2	188.9
Photographic equipment & supplies	386	105.6	113.0	107.8	110.2	116.4	126.9	132.7	129.5	129.0
Jewelry, silverware, and plated ware	391	100.1	102.9	99.3	95.8	96.7	96.7	99.5	100.2	103.2
Musical instruments	393	101.8	96.1	97.1	96.9	96.0	95.6	88.7	86.9	78.9
Toys and sporting goods	394	104.8	106.0	108.1	109.7	104.9	114.2	109.7	113.6	120.0
Pens, pencils, office, and art supplies	395	108.6	113.3	118.7	117.3	111.7	112.0	130.2	135.4	144.4
Costume jewelry and notions	396	102.0	93.8	105.3	106.7	110.8	115.8	129.0	143.7	142.3
Miscellaneous manufactures	399	104.5	102.8	107.9	109.9	109.6	107.8	106.2	108.2	113.5
U.S. postal service	431	99.9	99.7	104.0	103.7	104.5	107.1	106.6	106.5	104.7
Air transportation	4512,13,22 (pts.)	99.5	95.8	92.9	92.5	96.9	100.2	105.7	108.6	111.0
Telephone communications	481	106.2	111.6	113.3	119.8	127.7	135.5	142.2	148.1	162.2
Radio and television broadcasting	483	103.1	106.2	104.9	106.1	108.3	106.7	110.1	109.6	105.0
Cable and other pay TV services	484	102.0	99.7	92.5	87.5	88.3	85.1	83.3	84.3	81.1
Electric utilities	491,3 (pt.)	104.9	107.7	110.1	113.4	115.2	120.6	126.8	135.0	146.2
Gas utilities	492,3 (pt.)	105.5	103.5	94.8	94.0	95.3	107.0	102.2	107.5	114.6
Lumber and other building materials dealers	521	101.0	99.1	103.6	101.3	105.4	109.1	115.4	113.4	115.7
Paint, glass, and wallpaper stores	523	102.8	101.7	106.0	99.4	106.5	108.4	116.7	115.0	120.1
Hardware stores	525	108.6	115.2	110.5	102.5	107.2	106.6	114.3	111.0	119.2
Retail nurseries, lawn and garden supply stores	526	106.7	103.4	83.9	88.5	100.4	102.4	108.1	104.9	118.5
Department stores	531	99.2	97.0	94.2	98.2	100.9	105.0	107.1	108.5	112.7
Variety stores	533	101.9	124.4	151.2	154.2	167.7	169.9	159.7	157.3	175.0

See footnotes at end of table.

42. Continued—Annual indexes of output per hour for selected 3-digit SIC industries

[1987 = 100]

Industry	SIC	1988	1989	1990	1991	1992	1993	1994	1995	1996
Miscellaneous general merchandise stores	539	100.8	109.8	116.4	121.8	136.1	160.0	161.7	165.3	163.2
Grocery stores	541	98.9	95.4	94.6	93.7	93.3	92.6	92.2	90.9	89.1
Meat and fish (seafood) markets	542	99.0	97.6	96.8	88.4	95.8	95.9	95.4	95.8	86.5
Retail bakeries	546	89.8	83.3	89.7	94.7	94.0	85.6	85.6	84.5	77.4
New and used car dealers	551	103.4	102.5	106.1	104.1	106.5	107.4	108.3	106.5	107.3
Auto and home supply stores	553	103.2	101.6	102.7	99.0	100.0	98.9	102.8	106.0	105.6
Gasoline service stations	554	103.0	105.2	102.6	104.3	109.7	112.3	114.4	117.1	114.5
Men's and boys' wear stores	561	106.0	109.6	113.7	119.2	118.2	117.7	122.6	125.1	129.0
Women's clothing stores	562	97.8	99.5	101.5	103.0	112.2	117.7	119.3	128.6	130.6
Family clothing stores	565	102.0	104.9	104.5	106.4	111.7	111.1	114.0	123.1	130.9
Shoe stores	566	102.7	107.2	106.1	105.1	111.5	110.8	120.4	124.9	131.5
Miscellaneous apparel and accessory stores	569	96.3	95.2	88.6	78.8	89.1	89.0	92.4	107.9	115.8
Furniture and homefurnishings stores	571	98.6	100.9	101.8	101.5	108.4	108.7	110.6	114.8	118.2
Household appliance stores	572	98.5	103.5	102.8	105.2	113.9	114.4	115.4	129.2	128.1
Radio, television, computer, and music stores	573	118.6	114.6	119.6	128.3	137.8	148.7	167.6	180.0	185.0
Eating and drinking places	581	102.8	102.2	104.0	103.1	102.5	103.0	101.5	101.5	98.3
Drug and proprietary stores	591	101.9	102.5	103.6	104.7	103.6	104.6	104.2	104.4	105.6
Liquor stores	592	98.2	101.1	105.2	105.9	108.4	100.3	98.4	102.6	110.1
Used merchandise stores	593	105.3	104.9	100.3	98.6	110.4	109.3	109.8	109.0	96.8
Miscellaneous shopping goods stores	594	100.7	104.2	104.2	105.0	102.7	104.8	108.7	112.7	117.0
Nonstore retailers	596	105.6	110.8	108.8	109.3	122.1	122.0	131.9	128.7	129.0
Fuel dealers	598	95.6	92.0	84.4	85.3	84.4	85.4	85.5	89.0	90.7
Retail stores, n.e.c.	599	105.9	103.1	113.7	103.2	111.6	113.1	116.3	112.6	126.6
Commercial banks	602	102.8	104.8	107.7	110.1	111.0	120.2	122.3	127.6	131.5
Hotels and motels	701	97.6	95.0	96.1	99.1	107.8	106.2	109.6	110.1	109.5
Laundry, cleaning, and garment services	721	97.2	99.7	101.8	99.2	98.3	98.6	103.6	105.2	108.2
Photographic studios, portrait	722	100.1	94.9	96.6	92.8	97.7	105.5	116.7	128.1	122.2
Beauty shops	723	95.1	99.6	96.8	94.8	99.6	95.6	99.3	102.7	104.6
Barber shops	724	108.8	111.6	100.2	94.1	112.1	120.7	117.7	114.4	123.0
Funeral services and crematories	726	102.5	97.9	90.9	89.5	103.2	98.5	104.0	99.7	97.0
Automotive repair shops	753	105.7	108.1	106.9	98.7	103.3	103.5	111.7	118.5	112.9
Motion picture theaters	783	107.1	114.3	115.8	116.0	110.8	109.3	104.8	99.3	100.5

n.e.c. = not elsewhere classified.

NOTE: Output per employee is used for SIC 4512, 13, 22.

43. Unemployment rates, approximating U.S. concepts, in nine countries, quarterly data seasonally adjusted

Country	Annual average		1996	1997				1998		
	1996	1997	IV	I	II	III	IV	I	II	III
United States	5.4	4.9	5.3	5.3	4.9	4.9	4.7	4.7	4.4	4.6
Canada	9.7	9.2	9.9	9.6	9.4	9.0	8.9	8.6	8.4	8.3
Australia	8.6	8.6	8.6	8.7	8.7	8.6	8.3	8.1	8.1	8.2
Japan	3.4	3.4	3.3	3.3	3.4	3.4	3.5	3.7	4.2	4.3
France	12.5	12.4	12.6	12.4	12.5	12.5	12.3	12.0	11.8	11.7
Germany	7.2	–	7.5	7.7	7.7	7.8	7.8	7.7	7.5	7.4
Italy[1]	12.1	12.3	12.0	12.3	12.3	12.2	12.3	12.1	12.4	12.4
Sweden	9.9	–	10.4	10.6	10.4	9.5	8.8	8.4	8.2	8.2
United Kingdom	8.2	–	7.9	7.4	7.2	6.9	6.6	6.4	–	–

[1] Quarterly rates are for the first month of the quarter.

– Data not available.

NOTE: Quarterly figures for France, Germany, and the United Kingdom are calculated by applying annual adjustment factors to current published data, and therefore should be viewed as less precise indicators of unemployment under U.S. concepts than the annual figures. See "Notes on the data" for information on breaks in series. For further qualifications and historical data, see *Comparative Labor Force Statistics, 10 Countries* (Bureau of Labor Statistics, August 1996).

44. Annual data: Employment status of the working-age population, approximating U.S. concepts, 10 countries

[Numbers in thousands]

Employment status and country	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Civilian labor force										
United States[1]	121,669	123,869	125,840	126,346	128,105	129,200	131,056	132,304	133,943	136,297
Canada	13,900	14,151	14,329	14,408	14,482	14,663	14,832	14,928	15,145	15,354
Australia	7,974	8,228	8,444	8,490	8,562	8,619	8,776	9,001	9,127	9,220
Japan	60,860	61,920	63,050	64,280	65,040	65,470	65,780	65,990	66,450	67,200
France	23,980	24,170	24,300	24,490	24,570	24,640	24,760	24,860	25,080	25,140
Germany	28,610	28,840	29,410	29,760	30,030	29,950	29,860	29,710	29,590	–
Italy	22,660	22,530	22,670	22,940	22,910	22,760	22,640	22,700	22,820	22,860
Netherlands	6,310	6,430	6,640	6,750	6,950	7,090	7,190	7,270	7,320	–
Sweden	4,494	4,552	4,597	4,591	4,520	4,443	4,418	4,460	4,459	–
United Kingdom	28,270	28,580	28,730	28,610	28,410	28,310	28,280	28,480	28,620	–
Participation rate[2]										
United States[1]	65.9	66.5	66.5	66.2	66.4	66.3	66.6	66.6	66.8	67.1
Canada	67.2	67.5	67.3	66.7	65.9	65.5	65.3	64.8	64.9	64.8
Australia	63.3	64.0	64.6	64.1	63.9	63.6	63.9	64.6	64.6	64.3
Japan	61.9	62.2	62.6	63.2	63.4	63.3	63.1	62.9	63.0	63.2
France	56.2	56.1	56.0	56.0	55.8	55.6	55.5	55.3	55.4	55.2
Germany	55.1	55.2	55.3	55.4	55.1	54.2	53.7	53.2	52.8	–
Italy	47.4	47.3	47.2	47.7	47.5	48.1	47.5	47.6	47.7	47.7
Netherlands	54.2	54.7	56.1	56.5	57.8	58.5	59.0	59.3	59.4	–
Sweden	66.9	67.3	67.4	67.0	65.7	64.5	63.9	64.3	64.3	–
United Kingdom	63.5	64.0	64.1	63.7	63.1	62.8	62.5	62.7	62.7	–
Employed										
United States[1]	114,968	117,342	118,793	117,718	118,492	120,259	123,060	124,900	126,708	129,558
Canada	12,819	13,086	13,165	12,916	12,842	13,015	13,292	13,506	13,676	13,941
Australia	7,398	7,720	7,859	7,676	7,637	7,680	7,921	8,235	8,344	8,429
Japan	59,310	60,500	61,710	62,920	63,620	63,810	63,860	63,890	64,200	64,900
France	21,520	21,850	22,100	22,140	22,010	21,730	21,710	21,940	21,950	22,020
Germany	26,800	27,200	27,950	28,480	28,660	28,230	27,920	27,770	27,470	–
Italy	20,870	20,770	21,080	21,360	21,230	20,430	20,080	19,970	20,050	20,050
Netherlands	5,830	5,980	6,230	6,350	6,560	6,620	6,670	6,760	6,850	–
Sweden	4,410	4,480	4,513	4,447	4,265	4,028	3,992	4,056	4,019	–
United Kingdom	25,850	26,510	26,740	26,090	25,530	25,340	25,550	26,000	26,280	–
Employment-population ratio[3]										
United States[1]	62.3	63.0	62.8	61.7	61.5	61.7	62.5	62.9	63.2	63.8
Canada	62.0	62.4	61.9	59.8	58.4	58.2	58.5	58.6	58.6	58.9
Australia	58.7	60.1	60.1	57.9	57.0	56.6	57.7	59.1	59.1	58.8
Japan	60.4	60.8	61.3	61.8	62.0	61.7	61.3	60.9	60.9	61.0
France	50.4	50.7	50.9	50.6	50.0	49.0	48.7	48.8	48.5	48.4
Germany	51.6	52.0	52.6	53.0	52.6	51.1	50.2	49.7	49.0	–
Italy	43.7	43.6	43.9	44.5	44.0	43.1	42.1	41.8	41.9	41.9
Netherlands	50.0	50.9	52.6	53.2	54.5	54.7	54.7	55.2	55.6	–
Sweden	65.7	66.2	66.1	64.9	62.0	58.5	57.6	58.4	57.9	–
United Kingdom	58.1	59.3	59.6	58.0	56.7	56.2	56.5	57.2	57.6	–
Unemployed										
United States[1]	6,701	6,528	7,047	8,628	9,613	8,940	7,996	7,404	7,236	6,739
Canada	1,082	1,065	1,164	1,492	1,640	1,649	1,541	1,422	1,469	1,414
Australia	576	508	585	814	925	939	856	766	783	791
Japan	1,550	1,420	1,340	1,360	1,420	1,660	1,920	2,100	2,250	2,300
France	2,460	2,320	2,200	2,350	2,560	2,910	3,050	2,920	3,150	3,130
Germany	1,810	1,640	1,460	1,280	1,370	1,720	1,940	1,940	2,120	–
Italy	1,790	1,760	1,590	1,580	1,680	2,330	2,560	2,720	2,760	2,810
Netherlands	480	450	410	400	390	470	520	510	470	–
Sweden	84	72	84	144	255	415	426	404	440	–
United Kingdom	2,420	2,070	1,990	2,520	2,880	2,970	2,730	2,480	2,340	–
Unemployment rate										
United States[1]	5.5	5.3	5.6	6.8	7.5	6.9	6.1	5.6	5.4	4.9
Canada	7.8	7.5	8.1	10.4	11.3	11.2	10.4	9.5	9.7	9.2
Australia	7.2	6.2	6.9	9.6	10.8	10.9	9.7	8.5	8.6	8.6
Japan	2.5	2.3	2.1	2.1	2.2	2.5	2.9	3.2	3.4	3.4
France	10.3	9.6	9.1	9.6	10.4	11.8	12.3	11.8	12.5	12.4
Germany	6.3	5.7	5.0	4.3	4.6	5.7	6.5	6.5	7.2	–
Italy	7.9	7.8	7.0	6.9	7.3	10.2	11.3	12.0	12.1	12.3
Netherlands	7.6	7.0	6.2	5.9	5.6	6.6	7.2	7.0	6.4	–
Sweden	1.9	1.6	1.8	3.1	5.6	9.3	9.6	9.1	9.9	–
United Kingdom	8.6	7.2	6.9	8.8	10.1	10.5	9.7	8.7	8.2	–

45. Annual indexes of manufacturing productivity and related measures, 12 countries

[1992 = 100]

Item and country	1960	1970	1973	1980	1987	1988	1989	1990	1991	1993	1994	1995	1996	1997
Output per hour														
United States	–	–	–	71.9	94.3	97.8	97.0	97.7	98.2	102.1	108.1	115.1	120.2	125.6
Canada	40.7	59.2	69.6	75.2	91.1	91.0	92.4	95.2	95.0	103.3	105.7	108.4	106.6	109.6
Japan	14.0	38.0	48.1	63.9	81.2	84.8	89.5	95.4	99.4	100.5	101.8	109.3	111.9	118.8
Belgium	17.8	32.7	42.6	64.5	88.7	91.8	96.7	96.9	99.1	104.1	110.0	109.4	110.6	116.8
Denmark	29.9	52.7	66.9	90.3	90.6	94.1	99.6	99.1	99.6	105.5	–	–	–	–
France	23.0	45.5	53.9	70.5	86.7	92.7	97.4	99.1	98.7	101.8	110.4	114.3	117.9	125.9
Germany	29.1	52.0	61.0	77.2	88.3	91.5	94.3	98.9	101.8	100.7	108.0	112.0	116.7	123.6
Italy	19.6	36.8	43.9	64.0	85.0	86.6	89.4	92.8	95.3	104.5	107.4	113.9	114.4	117.4
Netherlands	19.5	38.6	48.8	69.8	91.7	93.8	97.1	98.5	99.6	101.9	114.2	119.6	122.6	–
Norway	36.7	57.8	67.6	76.7	93.3	92.1	94.6	96.6	97.5	100.6	101.4	102.0	102.6	103.2
Sweden	27.6	52.8	62.1	74.0	90.1	90.8	93.8	95.0	95.0	106.7	116.1	122.4	125.4	133.6
United Kingdom	30.2	43.3	51.4	54.4	78.1	82.6	86.2	89.2	93.9	105.6	109.2	107.6	106.2	107.2
Output														
United States	–	–	–	77.3	97.9	104.5	104.0	102.5	98.7	103.5	112.2	119.8	124.5	124.5
Canada	34.2	60.5	76.8	85.4	103.2	109.3	110.8	106.6	98.8	105.9	112.7	118.3	119.5	126.8
Japan	10.7	38.8	50.0	59.9	78.4	84.6	90.2	96.3	101.4	96.0	95.4	100.6	103.2	108.6
Belgium	30.7	57.6	70.6	78.2	88.7	93.1	98.9	101.0	100.7	96.9	101.4	104.5	104.7	109.4
Denmark	40.8	68.0	79.5	91.3	99.3	100.8	104.3	102.7	101.7	100.0	101.2	106.2	109.3	114.0
France	32.4	66.9	80.1	92.7	91.1	96.3	101.6	103.5	101.7	96.2	101.3	105.3	107.5	112.8
Germany	41.5	70.9	78.5	85.3	88.0	90.9	94.0	99.1	102.8	91.8	93.5	94.3	93.8	97.0
Italy	21.5	44.8	54.1	78.7	88.5	94.8	98.6	100.4	99.7	96.6	101.9	107.5	106.1	108.6
Netherlands	31.9	59.8	68.0	77.8	89.5	92.8	96.9	100.1	100.6	98.2	104.2	107.5	109.1	–
Norway	56.5	89.1	102.2	103.6	110.7	105.3	101.3	100.2	98.3	102.7	106.7	109.0	111.4	114.8
Sweden	46.5	81.7	88.5	91.8	107.7	110.2	111.6	110.6	103.6	101.3	115.7	130.1	132.9	140.3
United Kingdom	67.8	90.4	99.7	87.2	94.5	101.5	105.5	105.4	100.1	101.5	106.2	108.0	108.3	109.9
Total hours														
United States	92.2	104.5	110.5	107.6	103.9	106.8	107.2	104.9	100.6	101.4	103.8	104.1	103.6	104.7
Canada	84.2	102.2	110.4	113.6	113.2	120.2	120.0	112.0	103.9	102.5	106.6	109.1	112.1	115.8
Japan	76.3	102.3	104.0	93.8	96.6	99.8	100.8	100.9	102.0	95.6	93.7	92.0	92.2	91.4
Belgium	172.1	176.3	165.6	121.4	100.0	101.5	102.3	104.3	101.6	93.2	92.2	95.6	94.6	93.7
Denmark	136.5	129.0	118.8	101.1	109.6	107.2	104.7	103.7	102.1	94.8	–	–	–	–
France	140.6	147.0	148.7	131.5	105.1	104.0	104.4	104.5	103.0	94.5	91.8	92.0	91.2	89.7
Germany	142.6	136.3	128.6	110.5	99.7	99.3	99.6	100.2	101.0	91.2	86.6	84.2	80.4	78.5
Italy	109.6	121.8	123.4	123.0	104.1	109.5	110.2	108.2	104.6	92.4	94.8	94.4	92.8	92.5
Netherlands	163.3	155.1	139.3	111.4	97.6	98.9	99.7	101.6	101.0	96.4	91.3	89.8	89.0	–
Norway	154.0	154.3	151.2	135.0	118.6	114.3	107.1	103.7	100.8	102.1	105.2	106.9	108.6	111.3
Sweden	168.3	154.7	142.5	124.0	119.5	121.4	119.0	116.4	109.0	94.9	99.6	106.3	106.0	105.0
United Kingdom	224.6	208.8	194.1	160.5	121.0	122.8	122.4	118.1	106.6	96.1	97.3	100.4	102.0	102.5
Compensation per hour														
United States	14.9	23.8	28.6	55.8	80.8	84.0	86.8	91.0	95.7	102.9	105.6	108.7	112.1	116.1
Canada	10.6	18.1	22.3	48.3	75.9	78.5	83.2	89.5	94.7	99.8	100.4	103.7	106.0	108.8
Japan	4.3	16.5	26.8	58.6	77.9	79.2	84.2	90.7	95.9	104.6	106.7	109.5	110.5	114.0
Belgium	5.6	14.1	21.7	52.7	79.3	81.0	85.2	89.9	95.4	105.0	108.4	111.6	114.1	116.5
Denmark	4.6	13.3	20.5	49.6	80.1	82.9	87.7	92.7	95.9	102.4	–	–	–	–
France	4.3	10.5	14.9	41.3	79.7	82.7	87.2	91.8	96.3	103.6	106.2	107.7	109.4	112.6
Germany	8.1	20.8	29.1	53.8	76.5	79.5	83.3	89.4	95.0	106.0	111.8	117.8	123.7	126.5
Italy	1.6	4.6	7.0	27.9	66.1	68.7	75.5	84.0	93.1	107.1	106.6	112.3	119.4	125.2
Netherlands	6.4	20.3	31.8	64.7	87.8	87.7	88.5	90.8	95.2	103.7	108.2	111.1	114.5	–
Norway	4.7	11.8	17.0	39.0	78.5	83.3	87.2	92.3	97.5	101.5	104.4	109.2	114.4	119.6
Sweden	4.1	10.8	15.2	37.4	67.3	71.7	79.4	87.6	95.4	98.0	101.1	106.2	113.4	118.3
United Kingdom	3.1	6.4	9.6	33.7	65.9	70.3	75.1	83.4	92.9	106.2	108.2	108.6	110.9	115.2
Unit labor costs: National currency basis														
United States	–	–	–	77.6	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.5	93.3	92.4
Canada	26.0	30.5	32.0	64.2	83.3	86.3	90.0	94.0	99.6	96.6	95.0	95.6	99.4	99.3
Japan	30.9	43.3	55.7	91.7	96.0	93.4	94.0	95.0	96.5	104.1	104.9	100.1	98.8	96.0
Belgium	31.2	43.3	50.8	81.8	89.5	88.3	88.1	92.7	96.3	100.9	98.6	102.0	103.1	99.7
Denmark	15.4	25.2	30.6	55.0	88.4	88.2	88.1	93.6	96.3	97.0	99.7	101.9	101.2	102.2
France	18.7	23.0	27.6	58.6	92.0	89.3	89.5	92.6	97.6	101.8	96.2	94.2	92.8	89.4
Germany	28.0	40.0	47.7	69.7	86.7	86.9	88.3	90.4	93.3	105.3	103.6	105.2	106.0	102.4
Italy	8.0	12.6	16.0	43.7	77.8	79.4	84.4	90.5	97.7	102.5	99.2	98.6	104.4	106.6
Netherlands	33.0	52.7	65.1	92.7	95.8	93.5	91.1	92.1	95.6	101.8	94.8	92.9	93.4	–
Norway	12.9	20.4	25.1	50.8	84.1	90.4	92.2	95.6	100.0	100.9	102.9	107.1	111.5	115.9
Sweden	14.9	20.5	24.4	50.6	74.7	79.0	84.7	92.3	100.4	91.8	87.0	86.8	90.4	88.5
United Kingdom	10.3	14.8	18.8	62.1	84.5	85.0	87.2	93.5	99.0	100.5	99.1	101.0	104.4	107.5
Unit labor costs: U.S. dollar basis														
United States	–	–	–	77.6	85.7	85.9	89.5	93.1	97.5	100.8	97.7	94.5	93.3	92.4
Canada	32.4	35.3	38.7	66.4	75.9	84.8	91.9	97.3	105.0	90.5	84.0	84.2	88.1	86.6
Japan	10.9	15.3	26.1	51.5	84.2	92.4	86.3	83.1	90.9	118.8	130.1	135.1	115.1	100.5
Belgium	20.1	28.0	42.1	90.0	77.0	77.1	71.9	89.2	90.6	93.8	94.8	111.3	107.0	89.5
Denmark	13.5	20.3	30.7	58.9	77.9	79.0	72.6	91.3	90.8	90.3	94.7	109.8	105.3	93.4
France	20.2	22.0	32.9	73.5	81.0	79.3	74.3	90.0	91.5	95.1	91.8	100.0	96.1	81.1
Germany	10.5	17.1	28.1	59.9	75.3	77.3	73.4	87.3	87.7	99.4	99.8	114.7	110.0	92.2
Italy	15.9	24.7	34.0	62.9	73.9	75.1	75.8	93.0	97.0	80.3	75.8	74.6	83.4	77.1
Netherlands	15.4	25.6	41.2	82.1	83.1	83.1	75.5	88.9	89.8	96.3	91.6	101.8	97.4	–
Norway	11.3	17.8	27.2	63.9	77.5	86.1	82.9	95.0	95.7	88.3	90.7	105.0	107.3	101.6
Sweden	16.8	23.0	32.7	69.6	68.5	75.0	76.4	90.8	96.6	68.6	65.7	70.8	78.5	67.5
United Kingdom	16.4	20.1	26.0	81.7	78.4	85.8	80.8	94.5	99.1	85.5	86.0	90.2	92.3	99.6

– Data not available.

48. Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1985	1986	1987	1988	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]
PRIVATE SECTOR[5]												
Total cases	7.9	7.9	8.3	8.6	8.6	8.8	8.4	8.9	8.5	8.4	8.1	7.4
Lost workday cases	3.6	3.6	3.8	4.0	4.0	4.1	3.9	3.9	3.8	3.8	3.6	3.4
Lost workdays	64.9	65.8	69.9	76.1	78.7	84.0	86.5	93.8	–	–	–	–
Agriculture, forestry, and fishing[5]												
Total cases	11.4	11.2	11.2	10.9	10.9	11.6	10.8	11.6	11.2	10.0	9.7	8.7
Lost workday cases	5.7	5.6	5.7	5.6	5.7	5.9	5.4	5.4	5.0	4.7	4.3	3.9
Lost workdays	91.3	93.6	94.1	101.8	100.9	112.2	108.3	126.9	–	–	–	–
Mining												
Total cases	8.4	7.4	8.5	8.8	8.5	8.3	7.4	7.3	6.8	6.3	6.2	5.4
Lost workday cases	4.8	4.1	4.9	5.1	4.8	5.0	4.5	4.1	3.9	3.9	3.9	3.2
Lost workdays	145.3	125.9	144.0	152.1	137.2	119.5	129.6	204.7	–	–	–	–
Construction												
Total cases	15.2	15.2	14.7	14.6	14.3	14.2	13.0	13.1	12.2	11.8	10.6	9.9
Lost workday cases	6.8	6.9	6.8	6.8	6.8	6.7	6.1	5.8	5.5	5.5	4.9	4.5
Lost workdays	128.9	134.5	135.8	142.2	143.3	147.9	148.1	161.9	–	–	–	–
General building contractors:												
Total cases	15.2	14.9	14.2	14.0	13.9	13.4	12.0	12.2	11.5	10.9	9.8	9.0
Lost workday cases	6.8	6.6	6.5	6.4	6.5	6.4	5.5	5.4	5.1	5.1	4.4	4.0
Lost workdays	120.4	122.7	134.0	132.2	137.3	137.6	132.0	142.7	–	–	–	–
Heavy construction, except building:												
Total cases	14.5	14.7	14.5	15.1	13.8	13.8	12.8	12.1	11.1	10.2	9.9	9.0
Lost workday cases	6.3	6.3	6.4	7.0	6.5	6.3	6.0	5.4	5.1	5.0	4.8	4.3
Lost workdays	127.3	132.9	139.1	162.3	147.1	144.6	160.1	165.8	–	–	–	–
Special trades contractors:												
Total cases	15.4	15.6	15.0	14.7	14.6	14.7	13.5	13.8	12.8	12.5	11.1	10.4
Lost workday cases	7.0	7.2	7.1	7.0	6.9	6.9	6.3	6.1	5.8	5.8	5.0	4.8
Lost workdays	133.3	140.4	135.7	141.1	144.9	153.1	151.3	168.3	–	–	–	–
Manufacturing												
Total cases	10.4	10.6	11.9	13.1	13.1	13.2	12.7	12.5	12.1	12.2	11.6	10.6
Lost workday cases	4.6	4.7	5.3	5.7	5.8	5.8	5.6	5.4	5.3	5.5	5.3	4.9
Lost workdays	80.2	85.2	95.5	107.4	113.0	120.7	121.5	124.6	–	–	–	–
Durable goods:												
Total cases	10.9	11.0	12.5	14.2	14.1	14.2	13.6	13.4	13.1	13.5	12.8	11.6
Lost workday cases	4.7	4.8	5.4	5.9	6.0	6.0	5.7	5.5	5.4	5.7	5.6	5.1
Lost workdays	82.0	87.1	96.8	111.1	116.5	123.3	122.9	126.7	–	–	–	–
Lumber and wood products:												
Total cases	18.5	18.9	18.9	19.5	18.4	18.1	16.8	16.3	15.9	15.7	14.9	14.2
Lost workday cases	9.3	9.7	9.6	10.0	9.4	8.8	8.3	7.6	7.6	7.7	7.0	6.8
Lost workdays	171.4	177.2	176.5	189.1	177.5	172.5	172.0	165.8	–	–	–	–
Furniture and fixtures:												
Total cases	15.0	15.2	15.4	16.6	16.1	16.9	15.9	14.8	14.6	15.0	13.9	12.2
Lost workday cases	6.3	6.3	6.7	7.3	7.2	7.8	7.2	6.6	6.5	7.0	6.4	5.4
Lost workdays	100.4	103.0	103.6	115.7	–	–	–	128.4	–	–	–	–
Stone, clay, and glass products:												
Total cases	13.9	13.6	14.9	16.0	15.5	15.4	14.8	13.6	13.8	13.2	12.3	12.4
Lost workday cases	6.7	6.5	7.1	7.5	7.4	7.3	6.8	6.1	6.3	6.5	5.7	6.0
Lost workdays	127.8	126.0	135.8	141.0	149.8	160.5	156.0	152.2	–	–	–	–
Primary metal industries:												
Total cases	12.6	13.6	17.0	19.4	18.7	19.0	17.7	17.5	17.0	16.8	16.5	15.0
Lost workday cases	5.7	6.1	7.4	8.2	8.1	8.1	7.4	7.1	7.3	7.2	7.2	6.8
Lost workdays	113.8	125.5	145.8	161.3	168.3	180.2	169.1	175.5	–	–	–	–
Fabricated metal products:												
Total cases	16.3	16.0	17.0	18.8	18.5	18.7	17.4	16.8	16.2	16.4	15.8	14.4
Lost workday cases	6.9	6.8	7.2	8.0	7.9	7.9	7.1	6.6	6.7	6.7	6.9	6.2
Lost workdays	110.1	115.5	121.9	138.8	147.6	155.7	146.6	144.0	–	–	–	–
Industrial machinery and equipment:												
Total cases	10.8	10.7	11.3	12.1	12.1	12.0	11.2	11.1	11.1	11.6	11.2	9.9
Lost workday cases	4.2	4.2	4.4	4.7	4.8	4.7	4.4	4.2	4.2	4.4	4.4	4.0
Lost workdays	69.3	72.0	72.7	82.8	86.8	88.9	86.6	87.7	–	–	–	–
Electronic and other electrical equipment:												
Total cases	6.4	6.4	7.2	8.0	9.1	9.1	8.6	8.4	8.3	8.3	7.6	6.8
Lost workday cases	2.7	2.7	3.1	3.3	3.9	3.8	3.7	3.6	3.5	3.6	3.3	3.1
Lost workdays	45.7	49.8	55.9	64.6	77.5	79.4	83.0	81.2	–	–	–	–
Transportation equipment:												
Total cases	9.0	9.6	13.5	17.7	17.7	17.8	18.3	18.7	18.5	19.6	18.6	16.3
Lost workday cases	3.9	4.1	5.7	6.6	6.8	6.9	7.0	7.1	7.1	7.8	7.9	7.0
Lost workdays	71.6	79.1	105.7	134.2	138.6	153.7	166.1	186.6	–	–	–	–
Instruments and related products:												
Total cases	5.2	5.3	5.8	6.1	5.6	5.9	6.0	5.9	5.6	5.9	5.3	5.1
Lost workday cases	2.2	2.3	2.4	2.6	2.5	2.7	2.7	2.7	2.5	2.7	2.4	2.3
Lost workdays	37.9	42.2	43.9	51.5	55.4	57.8	64.4	65.3	–	–	–	–
Miscellaneous manufacturing industries:												
Total cases	9.7	10.2	10.7	11.3	11.1	11.3	11.3	10.7	10.0	9.9	9.1	9.5
Lost workday cases	4.2	4.3	4.6	5.1	5.1	5.1	5.1	5.0	4.6	4.5	4.3	4.4
Lost workdays	73.2	70.9	81.5	91.0	97.6	113.1	104.0	108.2	–	–	–	–

See footnotes at end of table.

46. Continued—Occupational injury and illness rates by industry,[1] United States

Industry and type of case[2]	Incidence rates per 100 full-time workers[3]											
	1985	1986	1987	1988	1989[1]	1990	1991	1992	1993[4]	1994[4]	1995[4]	1996[4]
Nondurable goods:												
Total cases	9.6	10.0	11.1	11.4	11.6	11.7	11.5	11.3	10.7	10.5	9.9	9.2
Lost workday cases	4.4	4.6	5.1	5.4	5.5	5.6	5.5	5.3	5.0	5.1	4.9	4.6
Lost workdays	77.6	82.3	93.5	101.7	107.8	116.9	119.7	121.8	–	–	–	–
Food and kindred products:												
Total cases	16.7	16.5	17.7	18.5	18.5	20.0	19.5	18.8	17.6	17.1	16.3	15.0
Lost workday cases	8.1	8.0	8.6	9.2	9.3	9.9	9.9	9.5	8.9	9.2	8.7	8.0
Lost workdays	138.0	137.8	153.7	169.7	174.7	202.6	207.2	211.9	–	–	–	–
Tobacco products:												
Total cases	7.3	6.7	8.6	9.3	8.7	7.7	6.4	6.0	5.8	5.3	5.6	6.7
Lost workday cases	3.0	2.5	2.5	2.9	3.4	3.2	2.8	2.4	2.3	2.4	2.6	2.8
Lost workdays	51.7	45.6	46.4	53.0	64.2	62.3	52.0	42.9	–	–	–	–
Textile mill products:												
Total cases	7.5	7.8	9.0	9.6	10.3	9.6	10.1	9.9	9.7	8.7	8.2	7.8
Lost workday cases	3.0	3.1	3.6	4.0	4.2	4.0	4.4	4.2	4.1	4.0	4.1	3.6
Lost workdays	57.4	59.3	65.9	78.8	81.4	85.1	88.3	87.1	–	–	–	–
Apparel and other textile products:												
Total cases	6.7	6.7	7.4	8.1	8.6	8.8	9.2	9.5	9.0	8.9	8.2	7.4
Lost workday cases	2.6	2.7	3.1	3.5	3.8	3.9	4.2	4.0	3.8	3.9	3.6	3.3
Lost workdays	44.1	49.4	59.5	68.2	80.5	92.1	99.9	104.6	–	–	–	–
Paper and allied products:												
Total cases	10.2	10.5	12.8	13.1	12.7	12.1	11.2	11.0	9.9	9.6	8.5	7.9
Lost workday cases	4.7	4.7	5.8	5.9	5.8	5.5	5.0	5.0	4.6	4.5	4.2	3.8
Lost workdays	94.6	99.5	122.3	124.3	132.9	124.8	122.7	125.9	–	–	–	–
Printing and publishing:												
Total cases	6.3	6.5	6.7	6.6	6.9	6.9	6.7	7.3	6.9	6.7	6.4	6.0
Lost workday cases	2.9	2.9	3.1	3.2	3.3	3.3	3.2	3.2	3.1	3.0	3.0	2.8
Lost workdays	49.2	50.8	55.1	59.8	63.8	69.8	74.5	74.8	–	–	–	–
Chemicals and allied products:												
Total cases	5.1	6.3	7.0	7.0	7.0	6.5	6.4	6.0	5.9	5.7	5.5	4.8
Lost workday cases	2.3	2.7	3.1	3.3	3.2	3.1	3.1	2.8	2.7	2.8	2.7	2.4
Lost workdays	38.8	49.4	58.8	59.0	63.4	61.6	62.4	64.2	–	–	–	–
Petroleum and coal products:												
Total cases	5.1	7.1	7.3	7.0	6.6	6.6	6.2	5.9	5.2	4.7	4.8	4.6
Lost workday cases	2.4	3.2	3.1	3.2	3.3	3.1	2.9	2.8	2.5	2.3	2.4	2.5
Lost workdays	49.9	67.5	65.9	68.4	68.1	77.3	68.2	71.2	–	–	–	–
Rubber and miscellaneous plastics products:												
Total cases	13.4	14.0	15.9	16.3	16.2	16.2	15.1	14.5	13.9	14.0	12.9	12.3
Lost workday cases	6.3	6.6	7.6	8.1	8.0	7.8	7.2	6.8	6.5	6.7	6.5	6.3
Lost workdays	107.4	118.2	130.8	142.9	147.2	151.3	150.9	153.3	–	–	–	–
Leather and leather products:												
Total cases	10.3	10.5	12.4	11.4	13.8	12.1	12.5	12.1	12.1	12.0	11.4	10.7
Lost workday cases	4.6	4.8	5.8	5.6	6.5	5.9	5.9	5.4	5.5	5.3	4.8	4.5
Lost workdays	88.3	83.4	114.5	128.2	130.4	152.3	140.8	128.5	–	–	–	–
Transportation and public utilities												
Total cases	8.6	8.2	8.4	8.9	9.2	9.6	9.3	9.1	9.5	9.3	9.1	8.7
Lost workday cases	5.0	4.8	4.9	5.1	5.3	5.5	5.4	5.1	5.4	5.5	5.2	5.1
Lost workdays	107.1	102.1	108.1	118.6	121.5	134.1	140.0	144.0	–	–	–	–
Wholesale and retail trade												
Total cases	7.4	7.7	7.7	7.8	8.0	7.9	7.6	8.4	8.1	7.9	7.5	6.8
Lost workday cases	3.2	3.3	3.4	3.5	3.6	3.5	3.4	3.5	3.4	3.4	3.2	2.9
Lost workdays	50.7	54.0	56.1	60.9	63.5	65.6	72.0	80.1	–	–	–	–
Wholesale trade:												
Total cases	7.2	7.2	7.4	7.6	7.7	7.4	7.2	7.6	7.8	7.7	7.5	6.6
Lost workday cases	3.5	3.6	3.7	3.8	4.0	3.7	3.7	3.6	3.7	3.8	3.6	3.4
Lost workdays	59.8	62.5	64.0	69.2	71.9	71.5	79.2	82.4	–	–	–	–
Retail trade:												
Total cases	7.5	7.8	7.8	7.9	8.1	8.1	7.7	8.7	8.2	7.9	7.5	6.9
Lost workday cases	3.1	3.2	3.3	3.4	3.4	3.4	3.3	3.4	3.3	3.3	3.0	2.8
Lost workdays	47.0	50.5	52.9	57.6	60.0	63.2	69.1	79.2	–	–	–	–
Finance, insurance, and real estate												
Total cases	2.0	2.0	2.0	2.0	2.0	2.4	2.4	2.9	2.9	2.7	2.6	2.4
Lost workday cases	.9	.9	.9	.9	.9	1.1	1.1	1.2	1.2	1.1	1.0	.9
Lost workdays	15.4	17.1	14.3	17.2	17.6	27.3	24.1	32.9	–	–	–	–
Services												
Total cases	5.4	5.3	5.5	5.4	5.5	6.0	6.2	7.1	6.7	6.5	6.4	6.0
Lost workday cases	2.6	2.5	2.7	2.6	2.7	2.8	2.8	3.0	2.8	2.8	2.8	2.6
Lost workdays	45.4	43.0	45.8	47.7	51.2	56.4	60.0	68.6	–	–	–	–

[1] Data for 1989 and subsequent years are based on the *Standard Industrial Classification Manual*, 1987 Edition. For this reason, they are not strictly comparable with data for the years 1985–88, which were based on the *Standard Industrial Classification Manual*, 1972 Edition, 1977 Supplement.

[2] Beginning with the 1992 survey, the annual survey measures only nonfatal injuries and illnesses, while past surveys covered both fatal and nonfatal incidents. To better address fatalities, a basic element of workplace safety, BLS implemented the Census of Fatal Occupational Injuries.

[3] The incidence rates represent the number of injuries and illnesses or lost workdays per 100 full-time workers and were calculated as (N/EH) X 200,000, where:

N = number of injuries and illnesses or lost workdays;
EH = total hours worked by all employees during the calendar year; and
200,000 = base for 100 full-time equivalent workers (working 40 hours per week, 50 weeks per year).

[4] Beginning with the 1993 survey, lost workday estimates will not be generated. As of 1992, BLS began generating percent distributions and the median number of days away from work by industry and for groups of workers sustaining similar work disabilities.

[5] Excludes farms with fewer than 11 employees since 1976.

– Data not available.

47. Fatal occupational injuries by event or exposure, 1992–96

Event or exposure[1]	Fatalities					
	1992	1993	1994	1995	1996	
	Number	Number	Number	Number	Number	Percent
Total	6,217	6,331	6,632	6,275	6,112	100
Transportation incidents	2,484	2,499	2,762	2,588	2,556	42
Highway incident	1,158	1,242	1,343	1,345	1,324	22
Collision between vehicles, mobile equipment	578	659	654	642	656	11
Moving in same direction	78	100	120	127	95	2
Moving in opposite directions, oncoming	201	245	230	246	214	4
Moving in intersection	107	123	144	99	153	3
Vehicle struck stationary object or equipment	192	189	255	275	240	4
Noncollision incident	301	336	373	351	348	6
Jackknifed or overturned—no collision	213	236	274	261	264	4
Nonhighway (farm, industrial premises) incident	436	392	409	389	369	6
Overturned	208	214	226	210	204	3
Worker struck by vehicle	346	365	391	388	349	6
Railway incident	66	86	81	82	75	1
Water vehicle incident	109	119	94	87	107	2
Aircraft incident	353	282	426	283	320	5
Assaults and violent acts	1,281	1,329	1,321	1,280	1,144	19
Homicides	1,044	1,074	1,080	1,036	912	15
Hitting, kicking, beating	52	35	47	46	47	1
Shooting	852	884	934	762	751	12
Stabbing	90	95	60	67	79	1
Self-inflicted injuries	205	222	214	221	199	3
Contact with objects and equipment	1,004	1,045	1,017	916	1,005	16
Struck by object	557	565	590	547	579	9
Struck by falling object	361	346	372	341	402	7
Struck by flying object	77	81	68	63	58	1
Caught in or compressed by equipment or objects	316	311	280	255	283	5
Caught in running equipment or machinery	159	151	147	131	146	2
Caught in or crushed in collapsing materials	110	138	132	99	130	2
Falls	600	618	665	650	684	11
Fall to lower level	507	534	580	577	607	10
Fall from ladder	78	76	86	97	95	2
Fall from roof	108	120	129	143	148	2
Fall from scaffold, staging	66	71	89	82	88	1
Fall on same level	62	49	63	53	49	1
Exposure to harmful substances or environments	605	592	641	609	523	9
Contact with electric current	334	325	348	348	279	5
Contact with overhead power lines	140	115	132	139	116	2
Contact with temperature extremes	33	38	50	56	32	1
Exposure to caustic, noxious, or allergenic substances	127	116	133	107	119	2
Inhalation of substances	83	68	84	62	75	1
Oxygen deficiency	111	112	109	97	92	2
Drowning, submersion	78	90	89	77	67	1
Fires and explosions	167	204	202	207	184	3
Other events or exposures[2]	76	44	24	25	16	–

[1] Based on the 1992 BLS Occupational Injury and Illness Classification Structures.

[2] Includes the category "Bodily reaction and exertion."

NOTE: Totals for major categories may include subcategories not shown separately. Percentages may not add to totals because of rounding. Dashes indicate less that 0.5 percent or data that are not available or that do not meet publication criteria.

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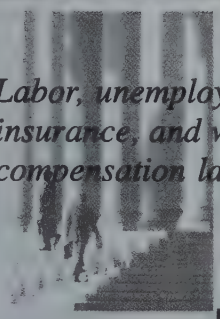

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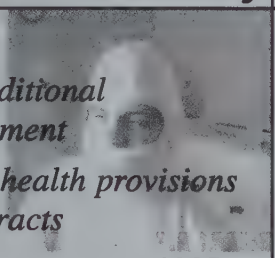

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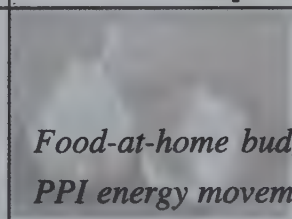

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BOOK REVIEWS (listed by author of book.)

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Green, Francis and David Ashton. *Education, Training and the Global Economy.* 1998 Aug. 39–40.

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Gustafson, Elizabeth, John Fizel, and Lawrence Hadley, eds. *Baseball Economics: Current Research.* 1998 Feb. 71–72.

Hadley, Lawrence, John Fizel, and Elizabeth Gustafson, eds. *Baseball Economics: Current Research.* 1998 Feb. 71–72.

Hecksher, Charles C. *The New Unionism.* 1998 Feb. 70.

International Labour Organization. *World Labour Report: Industrial Relations, Democracy, and Social Stability, 1997–98.* 1998 May. 44–46.

Karier, Thomas. *Great Experiments in American Economic Policy: From Kennedy to Reagan.* 1998 Nov. 64–65.

Knoke, William. *Bold New World: The Essential Road Map to the Twenty-First Century.* 1998 Feb. 71.

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McNabb, R. Scott and Garth L. Mangum. *The Rise, Fall and Replacement of Industrywide Bargaining in the Basic Steel Industry.* 1998 May. 43–44.

Mitchell, Olivia S., Marc M. Twinney, and Michael S. Gordon, eds., *Positioning Pensions for the Twenty-first Century.* 1998 Oct. 38–39.

Moody, Kim. *Workers in a Lean World: Unions in the International Economy.* 1998 Oct. 37–38.

Moore, Dorothy P. and E. Holly Buttner. *Women Entrepreneurs Moving Beyond the Glass Ceiling.* 1998 Mar. 80–81.

Nieswiadomy, Michael L. and Rose M. Rubin. *Expenditures of Older Americans.* 1998 July. 66–67.

O'Leary, Christopher J. and Stephen A. Wandner, eds. *Unemployment Insurance in the United States: Analysis of Policy Issues.* 1998 June. 39–40.

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Stromquist, Shelton and Marvin Bergman. eds. *Unionizing the Jungles: Labor and Community in the Twentieth-Century Meatpacking Industry.* 1998 Aug. 39.

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Wandner, Stephen A. and Christopher J. O'Leary, eds. *Unemployment Insurance in the United States: Analysis of Policy Issues.* 1998 June. 39–40.

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AUTHORS

Abowd, John. Econometric issues. 1998 July. 52–53.

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Cocks, Douglas L., Ernst R. Berndt, Iain M. Cockburn, Arnold M. Epstein, and Zvi Griliches. Prescription drug prices for the elderly. 1998 Sept. 23–44.

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Garner, Thesia I., Kathleen Short, Stephanie Shipp, Charles Nelson, and Geoffrey Paulin. Experimental poverty measurement for the 1990s. 1998 Mar. 39–61.

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Gittleman, Maury, Michael Horrigan, Mary Joyce and Harley Frazis. Results from the 1995 Survey of Employer-Provided Training. 1998 June. 3–13.

Godbout, Todd M. and Richard M. Devens, Jr. Employment growth and educational attainment. 1998 May. 40–41.

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_____Lane, Julia, Jim Spletzer, Jules Theeuwes, and Ken Troske. International Symposium on Linked employer-employee data. July 1998. 48–49.

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Hayghe, Howard V., Thomas W. Hale, and John M. McNeil. Persons with Disabilities—Labor market activity, 1994. 1998 Sept. 3–12.

Hecker, Daniel E. Earnings of college graduates: women compared with men. 1998 Mar. 62–71.

_____How hours of work affect occupational earnings. 1998 Oct. 8–18.

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Hobbie, Richard A. Book review. 1998 June. 39–40.

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Kelley, Joseph L. and Katherine A. Klemmer. Comparing PPI energy indexes to alternative data sources. 1998 Dec. 33–41.

Klein, Lawrence R. Book review. 1998 July. 66.

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Runner, Diana. Changes in unemployment insurance legislation in 1977. 1998 Jan. 29–36.

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Siskind, Aaron and Alan B. Krueger. Using survey data to assess bias in the Consumer Price Index. 1998 Apr. 24–33.

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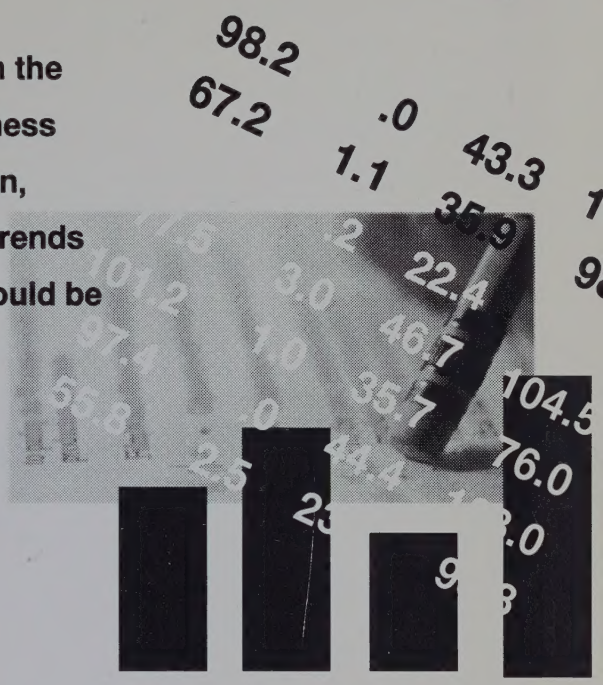

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